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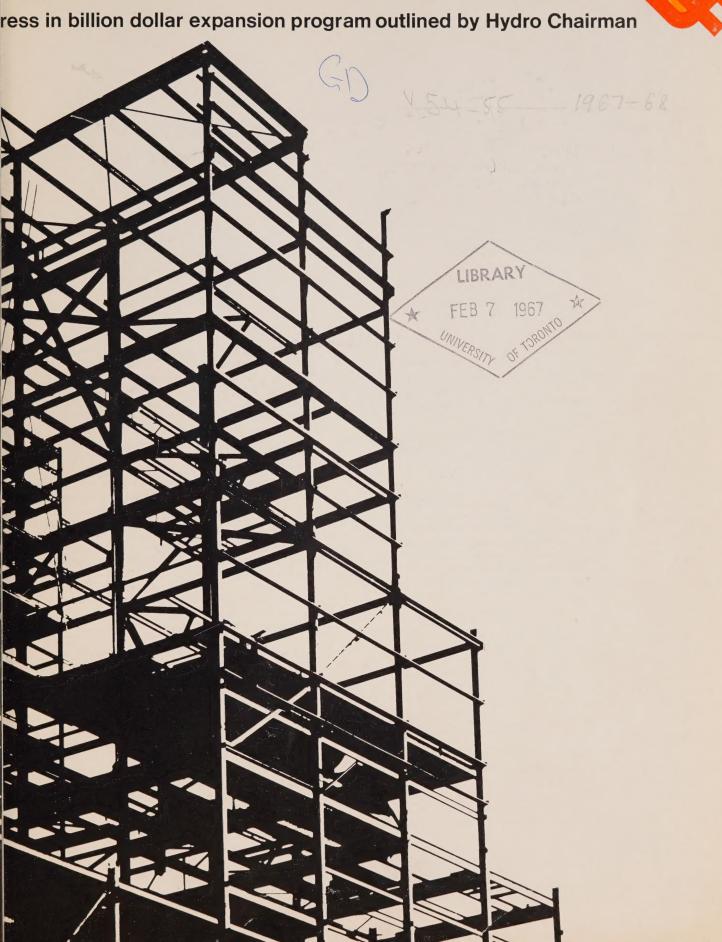






ontario hydro news january/1967

For Doc



Ontario hydrocal news

january/67



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the cover

The sounds of construction never cease on the Hydro system as the silhouette in steel on our cover suggests. Lambton generating station, shown, is just one of the major projects in the billion dollar expansion program outlined by Ontario Hydro Chairman George E. Gathercole in his report commencing on the opposite page.

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Dr. Holden is dead



Dr. Otto Holden, the man who played a pioneering role in Ontario's electrical development and won world recognition as an expert on the harnessing of great rivers for hydro-electric power, died in Toronto, December 30. Dr. Holden, 75, retired just over six years ago as Ontario Hydro's chief engineer.

During his 47-year Hydro career he helped build the Commission's first hydro-electric station at Wasdell Falls and was also responsible for one of the last major hydro-electric projects in the province — the St. Lawrence power development.

He worked under Hydro's first chairman, Adam Beck, and designed what later became the Sir Adam Beck-Niagara Generating Station No. 1. This was opened in 1921 and at one time was the largest installation of its kind. Dr. Holden directed the design of all Hydro's Ottawa River developments, one of which was named in his honor, and was deeply involved in the construction of the second Beck power station on the Niagara.

His qualifications as an expert in hydraulic engineering put him in considerable demand overseas. He went abroad seven times in 10 years, delivering papers to international conferences, studying European and Russian systems and acting as consultant on Australia's huge Snowy Mountains hydro project.

He also acted as a consultant for The Power Authority of the State of New York, The New Brunswick Electric-Power Commission and the Columbia River development in British Columbia. In addition, he found time to serve on an international committee charged with finding ways to preserve the scenic grandeur of Niagara Falls.

Yet he was a modest man. "No engineering work is the product of one man's hand or brain, but it's good to know you contributed your talents — to look back on a difficult job and see how it helped a province develop," he said shortly before his retirement.

Dr. Holden graduated from the University of Toronto with his B.A.Sc. and a post-graduate degree in civil engineering. Among the honors he received in later life was an honorary doctorate of engineering from the university in 1944. He was a member of many engineering associations and in 1959 was voted "Electrical Man of the Year" by the editors and readers of two important trade publications.



George E. Gathercole

A report from the Chairman

Keeping pace with the electrical requirements of this dynamic province is always a challenge and it was particularly gratifying to mark our 60th anniversary of Hydro progress in a year of such vigorous growth.

As we have come to expect, power demands reflected the buoyancy of the economy during 1966, reaching a new all-time peak of 8,565,465 kilowatts in December — about 9.6 per cent higher than in 1965. But as the year drew to an end, indications that the economy was entering a period of consolidation became evident. Anti-inflationary measures appear to be having their effect and as we move through 1967 we may see a rate of growth in electrical consumption closer to our long-term average of six-and-a-half per cent.

Regardless of temporary fluctuations in the rate of growth in electrical demands, however, Ontario Hydro is planning to double its generating resources within the next eight years. Although power demands are not expected to double in this time, our capacity must be increased faster than demand. This is because of the need for a reserve capacity more attuned to the changing technical character of our system.

The addition of larger thermal units, each accounting for a more significant portion of our total resources, is one of the factors requiring us to build up our reserve allowance. Others include the growing complexity of these units, with a greater likelihood of interruptions; "in-service" delays attributable to late delivery of equip-

ment and possible initial malperformance of prototype units.

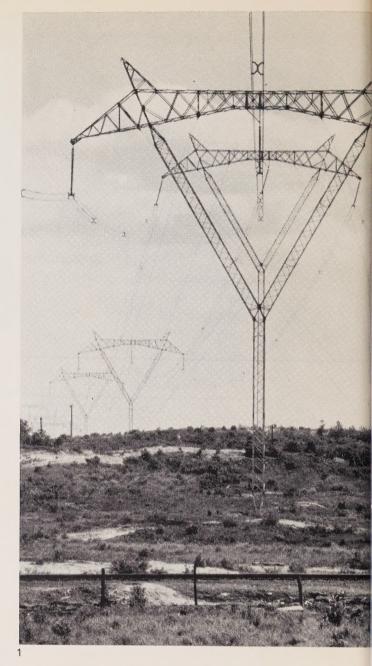
The task is formidable and to carry it out we have embarked on a billiondollar building program spread over five years. Involved are giant coalburning plants, nuclear-electric installations which are among the world's most advanced, and the continuing development of our remaining economic hydro-electric resources. In 1967 we expect to spend \$215 million on capital construction. This compares with \$195 million last year. In this Centennial Year, we are scheduled to add about 1,000,000 kilowatts of new generating capacity to our system - the largest increase in any year of our history.

Aside from the steady growth anticipated in industrial demands, consider just a few of the new areas of electrical consumption ahead. A color television set uses about 50 per cent more power than a black and white model. The combined demands of all TV sets now in Ontario are equal to the combined peak power requirements of Port Arthur, Sarnia, and Kingston. If color television achieves the market penetration predicted by the manufacturers, by the early 1970s this could represent a new block of demand equivalent to the combined peak needs of London and Oshawa.

The impact of electricity upon our environment will be enlarged in a

- 1. Power surges south with the partial completion of Hydro's 500,000-volt extra-high-voltage transmission line. The line will go into full service early this year bringing hydro-electric energy from the Mattagami and Abitibi Rivers in the James Bay watershed to southern load centres.
- A November day to remember . . . the starting up of the reactor at Canada's first full-scale nuclear-electric power station at Douglas Point. Nuclear power will play a dominant role in the future of Ontario's electricity supply.

Nuclear power is destined to play a dominant role in Ontario's supply of electricity as we move toward the year 2000. Coal and the power of falling water will continue to contribute.

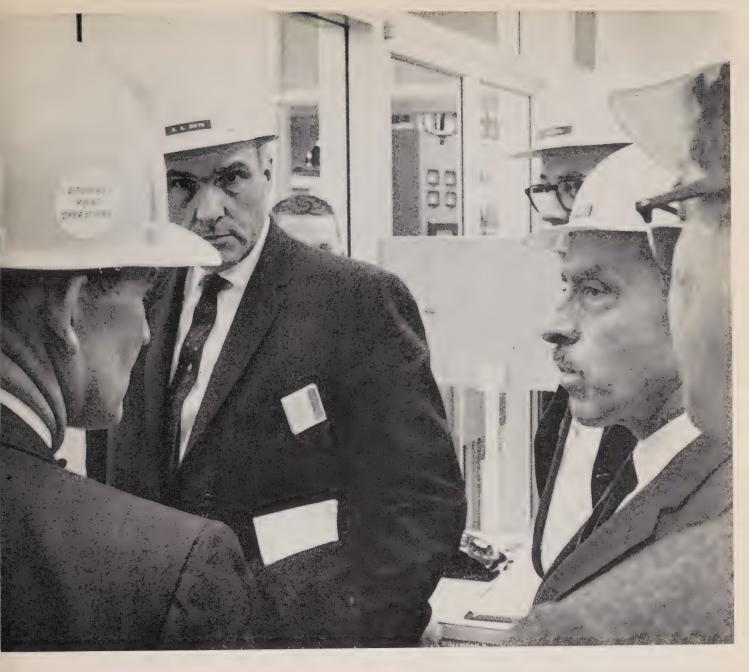


number of even more meaningful ways. The use of electric heating in homes will continue to grow, contributing substantially to a reduction in air pollution from fuel-burning heating systems. Nuclear power will also make an important contribution to the solution of this problem.

Renewed interest in the potential of electric cars suggests the possibility that in the not-too-far-off future we may glide silently to and from work without the haze of exhaust fumes. If people begin plugging in their cars overnight along with their electric blankets, a new and substantial area of electrical consumption will be created.

Looking back, I think that perhaps the most significant event of 1966 occurred on November 15 when technicians started up the nuclear reactor at the Douglas Point power station — Canada's first full-scale nuclear-electric plant. The Dougla Point plant, on the eastern shore Lake Huron, will feed 200,000 kild watts into the provincial power of The \$85 million Atomic Energy of Canada Limited plant, built in cooperation with Hydro, is being operated by Ontario Hydro person

Nuclear power is destined to play dominant role in Ontario's supply electricity as we move toward the year 2000. Our planners predict t by 1980 about one-third of Hydrentire generating capacity will be nuclear. We have ordered 6,500 tons of uranium to ensure sufficie fuel for existing stations, those unway and others not yet conceived. This is based on the assumption that at least 500,000 kilowatts of



r power will be added to our ces in each of the 10 years en 1970 and 1980.

symbols of our confidence in om as an economical source of city are the reactor buildings rapidly at Pickering on the of Lake Ontario, 20 miles f Toronto. Designed initially duce 1,080,000 kilowatts, the ing project may well be develfar beyond this capacity. We options on equipment to expand ring to more than two million atts and three to four million lite conceivable with the connce of the nuclear control rities. First power is expected Pickering in 1970.

continues to play a leading role operations, and conventional ourning plants, lending balance and flexibility to the system, will share in our expansion in the fore-seeable future. Only a few months ago we announced plans for a \$236 million coal-burning plant at the eastern end of Lake Erie. A site near Port Dover has been selected and we expect this plant may eventually equal the capacity of all our hydroelectric installations on the Niagara River.

Four units are now installed at the Lakeview power station, just west of Toronto, and a fifth began operation in December. Lakeview will have eight 300,000-kilowatt units — by far the largest coal-burning station in Canada.

Work is also on schedule at the \$218 million Lambton power station, near Sarnia. Coal deliveries will com-

mence here in 1968 and first power is expected late that same year.

At Fort William, in the West System, our coal-fired Thunder Bay station is standing by for immediate service in order to meet booming power demands occasioned, largely, by expansion in the pulp and paper and chemical industries. West System demand grew by about 12 per cent during the year.

Ontario's river systems also contributed substantially to our new power resources during 1966. The threestation complex on the Mattagami River, which flows into James Bay, was completed and these stations, together with a fourth built earlier on the Abitibi River, are now feeding power to the south. Unmanned,

their output and operation are controlled from one central point.

The hydro-electric construction front is now centered much farther south. On the Madawaska River, west of Renfrew, the Mountain Chute station is scheduled to commence operation later this year. Three other plants on this river are being improved or enlarged so that the price tag for the total Madawaska undertaking will be in the neighborhood of \$57 million.

Hydro crews are also busy in the forest country northwest of Elliot Lake where they are laying the groundwork for a \$26 million development at Aubrey Falls on the Mississagi River.

What factors affect our choice of a new generating station? There are many, but the overriding consideration

- 1. Down comes the concrete while up goes the dam at the \$27.7 million Mountain Chute hydro-electric station on the Madawaska River. About 280,000 cubic yards of concrete will be laid before the plant is finished later this year.
- 2. A workman moves carefully across one of the supports for the 3,200-ton concrete dome topping the first reactor building at Pickering nuclear power station, 20 miles east of Toronto. First power is expected from Pickering in 1970.
- 3. Municipal Affairs Minister Wilfrid Spooner (left) and Hydro Chairman George E. Gathercole start the turbines spinning in the far north where a three-station complex was completed last year along the Mattagami River.
- 4. Lakeview generating station will be among the largest coalburning plants in the world once its eight 300,000kilowatt units are in service. Five units at this development near Toronto are already producing electricity.

We must regard the system as part of a much more extensive network to enjoy the very real economic advantages of parallel operations with our neighbors. During the year our ties were strengthened.



is the cost of power delivered at the point of consumption. At base load operation, we calculate the cost of energy at Lakeview to be 4.28 mills a kilowatt-hour while at Lambton, where we will have 500,000-kilowatt units, we hope to produce energy for 4.06 mills. Power from Pickering nuclear station is expected to cost slightly less again but this technology is still in its infancy and further reductions may be forthcoming.

Technological improvements and the economics of size require us to constantly reassess our planning. Projects considered economical two or three years ago may be marginal today.

From the point of view of water storage, the state of which influences our cost of doing business substantially, 1966 was considerably bette than 1965. As the year ended, stora on watersheds on the East System, with the exception of the Great Lak was well above average. Storage o the much smaller West System wa somewhat below average.

The Great Lakes system, slow to reflect improved conditions becaus of its vastness, remained below the long-term average but was improvover 1965. Production at our Niagi and St. Lawrence River plants was in the neighborhood of two billion kilowatt-hours below normal. At the same time, it was two billion kilowathours above 1965. Reflecting the better water conditions, coal consumption up to November, 1966,







ept to 3.5 million tons. We 3.6 million tons in the same in the preceding year with less al-electric capacity available.

35-mile extra-high-voltage dission line from the James omplex to Toronto is now in at a half million volts as far as Sudbury. The remainder of e is operating at 230,000 and will be raised to 500,000 his year.

strate our progress in new ques, I should mention a stration we held recently for representatives from the United om, the United States, and parts of Canada on the bared maintenance of this live, 00-volt line. The alternative is ove the line from service during mance. It would then be

necessary to replace this big block of hydro power with more expensive thermal-electric generation.

Our overall network of power lines grows year by year and would now encircle the globe several times. Even so, we must regard the system as an integral part of a much more extensive network in order to enjoy the very real economic advantages of parallel operation with our neighbors. During the year we continued to strengthen our ties with these adjacent utilities.

In April we announced a major program of transmission line construction

which will eventually join Northwestern Ontario with the power grid serving the remainder of the province. Once this gap between Ontario's East and West systems is bridged, a physical link will be established between electric utilities from Saskatchewan to Quebec. At this moment, crews are clearing rightof-ways and erecting poles at various points in the wilderness between Sudbury and Marathon. We plan to have a complete, 230,000-volt tie between the two systems by 1970, permitting a full interchange of power over Hydro lines.

A third interconnection between Hydro and the Detroit-Edison Company spanning the St. Clair River was energized last December. Operating initially at 115,000 volts, this will be increased to 345,000 volts, second highest in the system, when the Lambton plant starts producing next year.

While we cannot afford to pass up the benefits of interconnections, we are taking every step we can to guard against major interruptions such as that which occurred on November 9, 1965. The cost of studies by various groups involved with the power interruption has so far exceeded a quarter of a million dollars.

In addition, Ontario Hydro has installed further relays in the system, modified existing relays and altered settings. We have obtained improved recording, monitoring and datalogging instruments and placed combustion-turbine generators at major thermal stations to provide

- 1. Steel reaches skyward as Hydro's Lambton generating station takes shape on the St. Clair River near Sarnia. The plant's four, 500,000-kilowatt generators will produce enough electricity to supply Metropolitan Toronto and Ottawa.
- 2. Helicopter pilot Sandy Ross takes on survey personnel at Aubrey Falls between Chapleau and Thessalon. Work has started on a \$26 million development at this site on the Mississagi River and first power is scheduled for 1969.
- 3. Among the highlights of the AMEU year was this conference on data processing held in London for the larger utilities across the province. From left are: John Irvine, Etobicoke Hydro; E. F. Burbank, Toronto, association president; C. H. Kew, London PUC and J. C. Fooks, Kingston PUC.
- 4. Hydro linemen demonstrate for electrical experts from Britain, the U.S. and elsewhere in Canada how they work safely with bare hands on a live 500,000-volt line. This technique avoids costly maintenance interruptions on EHV line.

On the subject of the municipalities, I cannot stress too strongly the bond between us... We are all in the business of providing the people of Ontario with low-cost power and good service.



emergency start-up power. Control systems have been refined and the entire network analyzed by computer to determine its stability and the limitations imposed by protective devices. Ontario Hydro expenditures in 1966 and 1967 for modification and new equipment to improve security will amount to \$12 million.

In line with our policy of amalgamating certain rural administrative areas in the interests of efficiency and to help maintain rates at the lowest possible level, four such areas were merged during the year. Our rural, retail customers are now served directly through 77 areas in seven regions. On the municipal scene, the amalgamation of several municipalities within Metropolitan Toronto has reduced the total number of Hydro municipalities to 352. At the

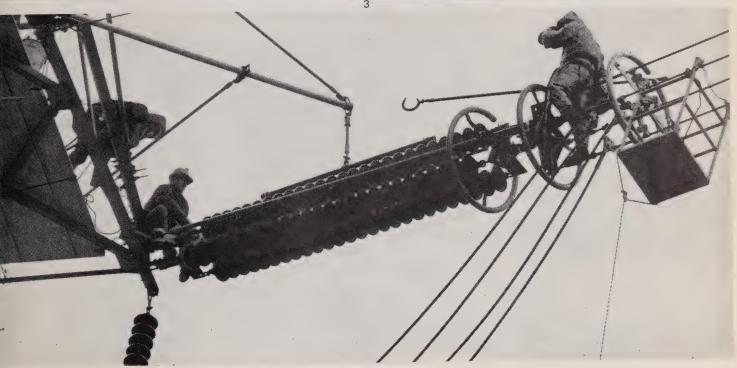
same time, we look forward to well coming the towns of Pembroke an Kenora into the family of cost control Hydro municipalities early this yea

On the subject of the municipalitie I cannot stress too strongly the between us. Their problems and interests are our problems and interests. We are all in the business of providing the people of Ontario with low-cost power and good service. Only through the closest co-operation can this be achieved.

Liaison with the utilities has been facilitated down through the years







eir representative organizations, ntario Municipal Electric Associand the Association of Municipal ical Utilities. Again in 1966 orked closely with them in a er of important areas.

ems have arisen — as they are d to do in any system so large omplex. There have been diffis, for example, with the new r costing procedures by which are established. But assisted a fact that we have representsiting on the OMEA's Powering Committee, I am certain utual problems will be satisfily resolved.

oint committee on marketing dvertising also continued to

supply invaluable assistance in helping to make this facet of our operations effective across the broad Hydro front.

Regional studies by government appointees recommending that committees of council take over the responsibilities of local Hydro commissioners emphasized the need for an effective public relations program. It is becoming apparent, I think, that while doing a good job is our paramount task, it is not enough. Commissioners must get their fine record across to the public and they can only do so by telling the Hydro story as strongly and frequently as possible. This is another area in which we are anxious to assist.

Whatever changes may come in the structure of local government, the

viability of the Hydro concept and the spirit and the vision of the men who guide it suggest to me that the municipal Hydro commissions will continue to play an important role in the social and economic development of our province.

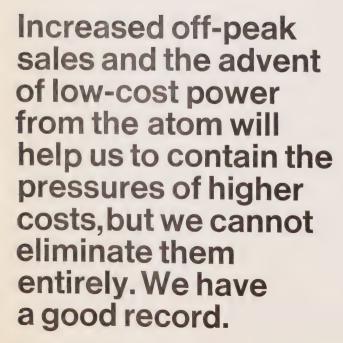
Some of the drama and romance of the Hydro story is being captured in the Hydro Hall of Memory — an OMEA-AMEU-Ontario Hydro Centennial project opening at Niagara Falls in February. The histories of the various utilities will be available for reference and special displays will highlight the fascinating development of public power in the

province. Past and present Hydro personalities will be featured.

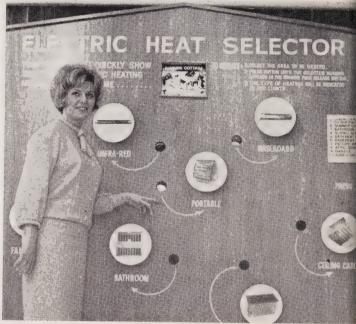
And for the first time the Hydro family has a tangible symbol to provide instant identification wherever it is displayed. The orange and vermilion O-H for Hydro in Ontario has already been adopted by more than 80 municipal utilities across the province and it is being displayed in many hundreds of applications here at Ontario Hydro.

As a finale to a successful marketing year our electrical modernization plan, in which Ontario Hydro will provide loans from \$100 to \$2,000 to help homeowners install such conveniences as improved wiring, built-in appliances and electric heating and cooling systems, was unveiled in the latter part of 1966. It has been estimated that more than

- 1. On the constantly shifting municipal scene the amalgamation of several municipalities within Metropolitan Toronto reduced total number of Hydro municipalities to 352. Among the youngest members of the Hydro family, Gloucester Hydro, celebrated its first birthday in 1966. Chairman A. J. Bowker is shown cutting a birthday cake.
- 2. Marketing continued to play an important role in Commission operations during 1966 with well-rounded educational, advertising and specialty programs commanding attention. Judy Lachoski is shown in Hydro's mobile demonstration coach.
- 3. Hot stick, live-line maintenance techniques are being carried out by this Ontario Hydro crew, near Tweed. Vehicles all sport the new Hydro look — the OH symbol in orange and vermillion on a white background.







a million Ontario homes are inadequately wired by modern standards. You will find further details of this program elsewhere in this issue of Hydro News.

Selling plays a vital role in the economics of electrical supply. Only by making optimum use of costly generating and distributing facilities and other equipment can we hold rates at a minimum.

At present, electric power is used to heat about 43,000 homes and apartment suites in the province while a further 17,500 dwellings should be added this year. We expect electric heating will go into 28 per cent of all new homes and 20 per cent of all apartment suites completed in 1967. There should also be

a considerable number of conversi from other forms of heating.

Perhaps our most spectacular succ has been in the competitive motel heating market. Here, electricity has forged its way to first place from a standing start seven years ago and we expect to install electric heatin in 80 per cent of all Centennial-ye motels. We hope to have electric water heaters in 60 per cent of the homes built this year and to add 20,000 kilowatts of commercial water heating load and a similar amount of commercial cooking lo

Much of our marketing success ca be attributed to well-directed edu tional, sales and advertising progra



ich the municipal utilities have ipated and co-operated so ively. For example, last year consored 25 electric heating hars, attended by more than) builders and realtors. We used ic blankets as bonuses to late the sale of electric clothes s between October 1 and mber 12. Other special activities ded demonstrations of decoraoutside lighting in several urban es; participation in the promoof battery-operated work vehicles new type of glare-free study We continued to sell industry elping its representatives to optimum use of electricity in particular operations.

ased off-peak sales and the nt of low-cost power from the will help us to contain the sures of higher costs, but we cannot eliminate them entirely. Hydro has a remarkably good record in this regard. In the last decade, the wholesale cost of energy provided by Ontario Hydro to the municipal utility systems went up very moderately. Moreover, the municipal utilities were generally able to absorb this increase, due largely to distribution economies arising from increased consumption, stimulated in part by Hydro's promotional programs. Actually, between 1956 and 1965, the average cost per kilowatt-hour of energy to residential consumers declined by 4.2 per cent.

But electrical utilities are no more immune to inflation in the costs of the goods and services they must buy than any other business, particularly so because of their capital intensive nature which requires frequent entries into the market to borrow large amounts of money for capital expansion. Ten years ago a bond issue of \$100 million would have cost us about \$85 million in interest charges over 20 years. At today's rate — our latest issue announced last month reached 6¼ per cent, the highest in our history — we must pay about \$125 million in interest. That represents an increase in the cost of carrying debt of more than 40 per cent in a single decade.

While we have intensified our efforts to economize in countless ways, we cannot forever absorb the higher cost of doing business. The increase

in the interim power rates to municipal utility systems this year reflects these pressures.

So there it is — another year of considerable progress and a suggestion of what is to come. One essential ingredient remains to be mentioned — people, Hydro people. They are our greatest asset.

The decade ahead will constitute for our staff an even greater challenge than the 60 years which have passed. I cannot help but feel proud of their accomplishments as we stand at the threshold of our country's Centennial: the great dams that girdle our rivers, the intricate machinery they devise, operate and maintain to produce a nebulous, yet tangible, form of energy. I have every confidence in their ability to cope with any test which time may bring.







Canada's first made-to-order rail commuter service has got the green light and before spring is finally sprung will be funnelling some 15,000 daily commuters in and out of downtown Toronto. It's also the first time any provincial government has assumed responsibility for fast, frequent, mass transportation.

GO is the name — short for Government of Ontario Transit — and soon its streamlined coaches will whish through the lakeshore communities between Hamilton in the west and Pickering in the east. Trains will clock an average of 40 miles an hour, getting Oakville and Pickering passengers into Toronto's Union Station within as many minutes. Commuters living closer in will barely have time to read the morning headlines.

The government's decision to shoulder the responsibility for the system was prompted by reasons of economy and demand. New equipment, stations, changes to the track and signalling will

cost around \$15 million. Existing CNR trackage is being utilized and an annual subsidy of about \$2 million is expected to be necessary, but this is chicken feed compared with the cost of an elevated expressway. Other economics also come into the picture. For one, there is the tremendous downtown parking problem which can only be intensified through construction of further expressways bringing thousands of additional automobiles into the heart of Toronto.

Public demand played an important part in setting GO on the rails. A 1964 study of transportation in and around Metropolitan Toronto revealed that residents of the bedroom communities — particularly along the lakeshore — would welcome a rail commuter service. The only stipulation was that it should be convenient, frequent and fast. Fares were of lesser importance.

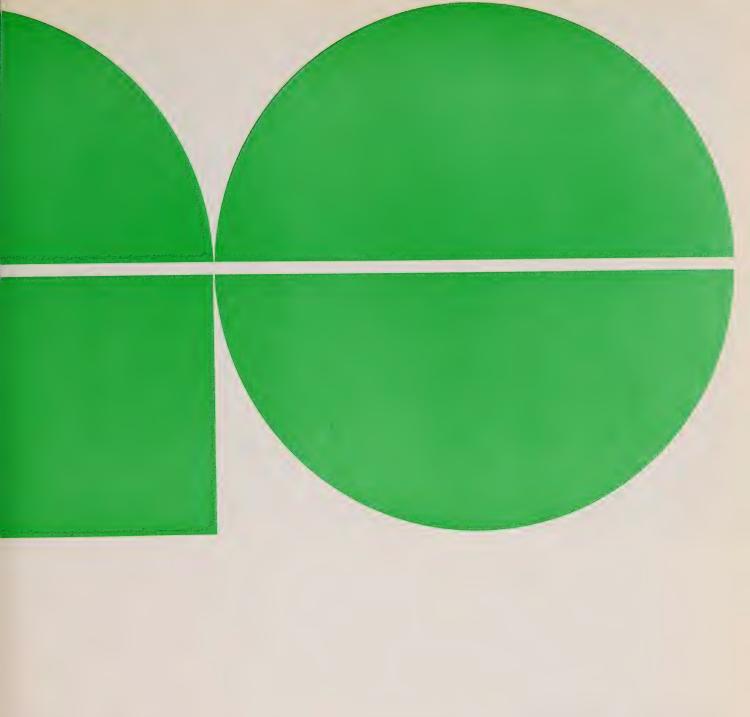
But according to Ed A. Ingraham, director of information services for GO, fares will "certainly be

competitive with the cost of automobile of muting and comparable to other forms of muting and comparable to other forms of muting at competing. He says the province isn't aim at competing with existing transportation, so as buses. Rather it is trying to serve expandements and keep cars out of the city and environments.

Fares are due for Cabinet approval early this y GO fare boxes are expected to take in \$1.5 mil yearly. To assure this, transit officials have a protional program planned which will hit hard be the service's introduction.

There will be 16 stops on the 59-mile line. On eastern leg are Danforth, Scarborough, Eglin Guildwood, Rouge Hill and Pickering. To the viof Toronto will be Mimico, Long Branch, Credit, Lorne Park, Clarkson, Oakville, Bro Burlington and Hamilton.

Service west of Oakville to Bronte, Burling and Hamilton will consist of two trains in the morning and evening rush hours. A trip f



ilton to downtown Metro will take only 65 tes.

the main Oakville-Toronto-Pickering sections is will run daily from 6 a.m. to midnight. At weekday periods there will be one every 20 lates, with an hourly service at off-peak periods well as weekends and holidays. More than 50 is will be running each weekday, calling for isse scheduling. Just to complicate the picture, i'll have to share the line with regular railway.

hen GO was first approved the CNR, which is a gas GO operating agent, assured the Ontario ernment there would be no trouble integrating th their regular traffic. The railway was building uge "hump" yard north of Toronto and this ald siphon off much of the downtown freight. CNR, like almost everyone else, hadn't foreseen economic boom of the last few years and the shore line is now carrying as much as ever.

A sophisticated central control system, new signals, swing-off points and two-way radio contact have solved the problem. Like a model railroad, freight trains will be switched to other tracks to give commuters the right-of-way.

The rolling stock of 40 coaches and nine self-propelled units resembles subway cars rather than conventional railway equipment. Liberal use of high-tensile steel and alloy aluminum by the manufacturer, Hawker Siddeley of Canada, represents a breakthrough in North American rail equipment. The tremendous weight reductions — GO coaches are approximately half the weight of similar existing equipment — spell out lower operating costs and higher speeds. The coaches have attracted interest from transportation engineers across the continent and Europe.

Each coach contains only 94 seats although the floor area would allow up to 125 seats. "Considering that we are out to woo the car commuter, it was

felt that seating was a highly-important factor in providing a desirable and familiar environment," explained Highways Minister C. S. MacNaughton, who was responsible for GO development until he was recently appointed Treasurer of Ontario.

Because all trains will operate on the push-pull principle to eliminate time-consuming turn-arounds at each end of the line, eight of the 40 coaches will be equipped with engineman's cabs. Controls in the cabs will be linked to one of the eight diesel locomotives which will provide the line's motive power.

Each unit will have its own thermostaticallycontrolled air conditioning and electric heating system. Using a new process called "injectair", a uniform flow of filtered air will be circulated along the cars at a moderate pressure and desired temperature.

Stations will also be of the jet-set variety. At Rouge Hill, where the prototype station was built,









nothing has been left out. Covering three acrethe complex has parking for 125 cars, a "kiss ar ride" area for wives to drop off and pick up commuter husbands, a feeder bus loop, a ticketin office and 14,000 square feet of platform sparequipped with aluminum shelters.

GO is an imaginative and positive approach the world-wide problem of moving people quick and comfortably to and from homes and offices large urban areas. Its success will be watch closely at home and abroad by municipalities seeing relief from the choking symptoms of automibilitis.

electrical commuting

Electricity could well play a prominent part in the future of mass transportation in the Hamilton Toronto-Oshawa "Golden Horseshoe". Ontarion Department of Highways officials admit that if the GO commuter project proves a success, the data



come when electrification of the service will to be considered.

othing can match the efficiency of electric ver when stations are close together. Capable ack-rabbit starts and stopping in a short disce, electric trains can maintain high average eds. And there's no air pollution.

nlike GO transit, however, which will be inte-

ed with regular railway traffic, electric trains daseparate right-of-way. At present, the numof people who will use the GO commuter ice wouldn't justify the additional cost.

ectrification is making big strides in other parts he world. British Railways have an intensive gram under way. Most lines in Southern England electrified and only last year an electric line ng London, Manchester and Liverpool went operation.

the United States, intensive studies are being e into the electrification of commuter lines. A

commuter service similar to GO will be inaugurated at San Francisco this year although initially it will not be electrified. And electric power is being given serious consideration at Cleveland, where tenders have been called for a rapid transit system.

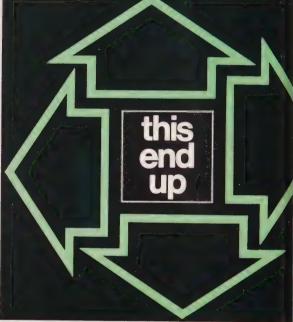
The concept of electric transportation is nothing new to Southern Ontario, where there was a 500-mile network of electric railways, called radials, in the early 1900s. One line was from Toronto as far north as Lake Simcoe. Sir Adam Beck, Ontario Hydro's first chairman, was one of the strongest advocates of the electric inter-urban transit system, having seen similar networks operating in densely-populated areas of Europe and the United States.

The radials could touch 50 miles an hour and had an enviable safety record. But the automobile sounded their death-knell. Now, it seems, the wheel could turn full cycle. Traffic-choked highways may be responsible for the resurrection of the electric railway.

Premier John Robarts accepted delivery of the first GO locomotive in December, then took a turn at the throttle. Coach interiors are spacious, featuring individual bucket-type seats, shadow-free lighting and background music. Two views of the Rouge Hill station, after which others are patterned, are shown. As well as a large parking area, station has a "kiss and ride" area, a feeder bus loop and platform with aluminum shelters.

Packaging is their business and this firm will wrap up anything from a moose head to a delicate piece of electronic equipment. They also make the huge crates in which De Havilland ship their planes. President Don Brent is an addict of electric heating.









they spent two years wrapping up a steel mill

Want to ship an airplane to Afghanistan, a steel mill to Dungapur or a moose head to Italy? Then 46-year-old Don Brent is definitely your man.

A rugged, restless individualist with thinning hair and big practical hands, Don is president of W. D. Brent Manufacturing, a go-ahead Malton packaging company that under his virile management is growing at a phenomenal pace.

"You name it, we'll package it," he says. At present the aircraft industry accounts for about half his business and he furnishes DeHavilland Aircraft of Canada with a steady supply of large wooden crates for their popular Beaver and Otter airplanes. He also does a roaring trade in delicate electronic equipment, tackling anything from matchbox-size computers to entire telephone exchanges.

"Our problem is too much business," says Don. "At times it's embarrassing. Every government agency is promoting exports and I know of only three other companies in Canada doing work similar to ourselves."

Don plans to almost triple the space at his plant, which already handles millions of feet of lumber a year. His men are working on a two-shift basis. He, himself, puts in a 12 to 14-hour day.

It's all a far cry from just after the last war when he started out with a capital of \$150 making store fixtures and fronts in the basement of his mother's home in Islington. He moved successively into an abandoned garage and two other buildings before establishing his company practically on the end of Toronto International Airport's runway 28.

It couldn't be more conveniently placed. Parts urgently needed halfway across the world can be packed and put aboard an airliner at a moment's notice. And what with the double glazing and additional insulation installed when he decided to have the offices electrically heated, the roar of the big jets hardly penetrates.

The head of Brent Manufacturing decided on separate heating for the offices because previous experience had shown that the forced-air system serving the plant section would blow sawdust over his secretaries. He plumped for electric heating

and has since become a confirmed addict, installing it at the Bala cottage where he spends summer weekends rebuilding boats.

"I guess I have a natural aptitude for woodwork," says Don, who was raised on the Prairies, started off in accounting, and quit because he couldn't stand office work. He gained his knowledge of aircraft as a wartime engineer and launched out on his own when hostilities ended and he found himself without a job.

A reliable measure of his success over the intervening years must be the \$750,000 of business the firm will do this year. But there's more to packaging than building a box, and the safe transportation of new and delicate types of equipment frequently calls for diligent research.

"We recently had to design and manufacture containers for some extremely fragile telephone equipment destined for Expo," says Don. "CNR helped us with the research because they also wanted to learn more about shipping electronic equipment. We strapped an impactograph to a truck to measure G-forces and drove over rough roads for weeks before we solved that one."

Other tall orders have included the parcelling-up of an entire telephone exchange for Newfoundland and most of the parts for a stainless steel mill in India, a two-year job which is only now nearing completion. The moose head? That was packed and flown to Europe after the unfortunate animal was shot north of Prince Albert, Saskatchewan, by an Italian millionaire.

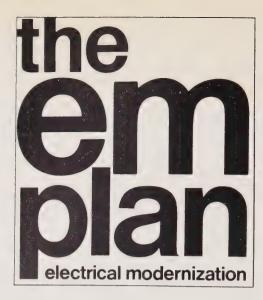
"We do things no one else is equipped to do," sales manager Ferd Hamre says. "We thrive on emergencies. We'll even send a crew to the customer's own plant if necessary."

Mr. Hamre, a lifelong friend of Don's father, retired only a year ago and joined Brent Manufacturing on a temporary basis. He's now firmly entrenched in his second career.

Perhaps it's typical of Don's practical outlook on life that he lives in a modest four-bedroom home in Etobicoke. His wife, Anne, is secretary-treasurer of the company and spends several hours at the plant each day. And, perhaps, it's typical of the successful businessman that he has unbounded forth.

"I'm the optimist around here," Don says. "There are times when people get a bit gloomy, but I'm the born optimist."

Because he couples it with hard work, Don Brent's optimism has reaped big dividends.



It's the biggest thing since they invented the kilowatt.

Take two Ontario utility representatives, mix them in with an electrical contractor, add a distributor or manufacturer to taste and you've almost certainly come up with the right recipe for a rousing discussion on electrical modernization. The whole electrical industry is talking about the new Hydro plan and small wonder — it's big and they all have an important role to play.

"Like the weather, electrical modernization has been a conversation piece for years," says D. J. Gordon, Hydro's assistant general manager, marketing, "but now we are going to do something about it."

Mr. Gordon unveiled details of the EM plan at the Ontario Electrical League conference held late in November at Toronto. Underscoring the significance of the new venture, he estimated that upwards of a million homes in Ontario were inadequately wired. Add the marketing potential of conversion heating to the other electrical improvements within the scope of the plan and, he concluded, "we have a veritable tiger by the tail."

Mr. Gordon's tiger is very large but he's likely to be most amenable to the measures Hydro is taking to let him live better electrically. He consists, in reality, of most of the existing single-dwelling houses in the urban centres across the province, as well as the farm homes. Electrical modernization will be available to all home owners served by Ontario Hydro or the municipal utilities.

The key to consumer acceptance of the home modernization program is considered to be the finance plan which will be operated by Ontario Hydro with the co-operation and assistance of the

municipal utilities in urban areas. Installations permanent nature qualifying for loans under plan will include:

- Service entrance and panel board equipme
- Wiring circuits and associated equipment as switches, receptacles, etc.
- Approved water heaters and the assoc wiring and plumbing.
- Built-in appliances (ranges, dishwashers et
- · Electric heating and cooling systems.

The plan will also cover limited structural where it is a part of the electrical modernizal installations. Examples would include re-desig counter tops and cabinets to accommodate but appliances and changes in ceiling structural accommodate modern lighting.

Approximately 75 per cent of the amount t financed must be electrical. Where the capaci a service must be increased, 100 amperes wi considered the minimum with provision for not than 20 circuits.

What induced Hydro to take the lead in suc extensive electrical home improvement progr

Maintaining low rates was one factor. One selling more kilowatt-hours per customer Hydro hope to keep rates low in the factor mounting inflationary pressures affecting the of doing business. And unless homes are a quately wired and up to modern electrical stand in general, the home owner cannot take advantage of electrical living.

Other considerations are just as vital. In Gordon's words: "Through our EM plan we had to spur utilities, contractors and manufacture into all-out, united action; stimulate public awness and interest in electrical home modernizat and achieve a higher standard of safety, efficie convenience and adequacy of wiring for all customers."

Adequacy and safety are perhaps the key where. Standards adopted in 1962 made it mar tory that all new homes in the province be instawith electrical services of not less than 100 a capacity. Further stipulations included a minin

separate circuits and the provision of heavyeceptacles in strategic locations. Anything an this is regarded as inadequate under the cal improvement plan.

ety and adequacy go hand in hand. Overcircuits and make-shift electrical installations, dition to being dangerous, cannot possibly with the electrical requirements of modern

make EM work, a hard-hitting advertising and ptional campaign has been developed by 's Advertising Department. Manager C. W. ateer sees it this way: "The plan has been oped, the trade has been informed, and now ur task to bring to the attention of the public enefits of Electrical Modernization and create esire for the home owner to install the faciliat will enable him to live better electrically in esent home."

plan will be introduced to the public through lass media in three phases. The first, already way, will be educational. It will emphasize advantages in convenience, comfort and which will accrue to the home owner who is home brought up-to-date electrically.

se II will announce the availability of the e plan and phase III will be aimed at ing the customer to have his home converted ectric heating. All promotional items will be ble to contractors, utilities and others on a pasis.

action to the EM plan from the contractor, es and manufacturer has been overwhelm-favorable. As one spokesman said, the plan is that it will "gather greater and greater mount month by month and ultimately become fon dollar boom for the electrical industry in its "."

eading trade journal editor sized it up as "a landmark in the market development history r industry."

crystal ball is required to foresee the effect of an electrical face-lifting on the industry. It can be salutary right down the line from the facturer of the equipment to the distributor of the man who makes the installations.

d, of course, there is the utility. It has long recognized that load-building is the surest is of guaranteeing a degree of stability in the of power. Mr. Gordon summed up EM's effect in utility when he said: "Utilities will increase energy sales and achieve a diversified load rn."

ally comes the customer and Mr. Gordon is it quite clear that the EM program is mer-oriented from start to finish.

may sound trite," he says, "but perhaps we deremind ourselves at the outset that the key cipant in this plan is the customer . . . What our friend the customer want from us as an stry? I would suggest to you that he wants efficient, convenient and fully-adequate electorice, and all that goes with it in the way of ances and utilization equipment to enable to fully enjoy the high standard of living in this nice of ours."

I is not expected to be without its problems.

Mr. Gordon foresees is that of ensuring cus-

tomer satisfaction with the quality of the work carried out under the plan.

"We simply cannot jeopardize the plan by the work of fly-by-night operators," he says, "and we are presently investigating, after discussion with the representatives of the municipal utilities, the feasibility of incorporating a requirement for bonding on the part of the contractors as a means of ensuring reputable participation in the program."

Training was another area which should receive immediate attention according to Hydro's marketing chief. He thought training in electric heating, under utility leadership, was well in hand but the situation regarding the up-grading of skills in rewiring was less clear.

He urged the Ontario Electric League, which is responsible for establishing wiring standards, to spearhead a training program in this area. "I don't think Hydro should carry the mail alone," he said.

Optimism is high. The people of Ontario are to be offered an opportunity to live better electrically now and to pay while they enjoy the advantages. It's up to all facets of the industry to put it across.

the credit end of the plan

Credit is an integral part of 20th century living and Hydro has long felt that some form of financing was necessary to enable customers to pay for electrical improvements. If people needed credit to buy cars or appliances, they reasoned, then the same must hold true for wiring and other major electrical work.

"When the electrical modernization plan was being initiated," explains J. O. Dean, Hydro's assistant treasurer, "we were convinced that a good part of the plan's potential could be lost without a credit plan to support it. It's very nearly impossible today to sell anything with a cost in excess of a few hundred dollars without some instalment payment plan."

At the same time, Mr. Dean emphasizes that the consumer credit arrangement is secondary to the overall objective of the modernization plan. Credit will not be used aggressively nor indiscriminately. "Our objective is to sell electrical modernization," Mr. Dean asserts, "not credit."

He also points out that the present credit plan had its origin with the Ontario Hydro Wiring Time Payment Plan started in 1960 and that similar plans had been offered for some time by a number of municipalities. But the new credit plan is much greater in scope and offers a number of advantages not available in all respects through existing credit organizations.

Primarily, it makes credit available at uniform terms to every customer of Ontario Hydro and the utilities, irrespective of size, who can afford it. And the need is there. It is estimated that a million Ontario homes have wiring which is hopelessly out of step with a humidified and temperature-controlled era of electric carving knives and dishwashers.

Here are a few highlights from the new credit plan:

- It will be operated by Ontario Hydro through its regional offices and through the various municipal utilities.
- All credit risks will be assumed by Ontario Hydro.
- All costs will be borne by Ontario Hydro. It's not intended to operate at a profit — merely to cover all costs through interest charges and provide a small reserve for probable losses.
- Municipal utilities will be reimbursed for their administration costs.
- Loans will range from a minimum of \$100 to a maximum \$2,000 with these terms: a downpayment of 10 per cent; up to 10 years to repay; an interest rate that will average 11 per cent.
- Ontario Hydro has engaged C. R. Connolly, former manager of the Hepco Credit Union, as credit manager. He will provide guidance to utilities and assume responsibility for credit approvals.
- Target date for first loan approvals is February 1, but this depends upon the speed at which details can be disseminated to all concerned. It is hoped that by May 1 the finance plan will be fully operational.

While the interest rates to be charged may appear high, the 11 per cent figure is calculated to show exactly how much the customer will pay. It is approximately equivalent to present bank rates.

The utilities will be responsible for approving the credit, under the guidance of the Ontario Hydro credit manager, and they will be asked to ensure that the work to be done is in accordance with the scope of the modernization plan. As Mr. Dean points out, these are two very important steps and a good deal of the success of the credit plan will depend upon them.

Other significant utility responsibilities include the registration of the conditional sales contracts, where applicable, and the follow-up on delinquent accounts or customer complaints. Although customer payments may be made through the utility office, the paperwork actually handled by them will be kept to an absolute minimum.

Details of the plan will be communicated to the utilities through a series of meetings with regional representatives. These meetings are presently being scheduled and will commence very shortly.



or a graphic description of the ebb and flow of high-tension crime

Clouds half-veil the September moon and there's a hint of winter in the air. An Ontario Hydro patrol car moves slowly down the road. Suddenly it stops. The guard gets out, examines the ragged end of a cable hanging from a power pole.

Farther east, a car starts up and pulls out from a side road. It moves away fast, without lights.

Turning back to the power line the guard sees that at least five spans of wire are missing. He searches the low brush nearby and finds the cut wire coiled and covered with branches and dead grass. A surprise patrol by security men has foiled yet another theft of valuable copper wire.

Prevention is a keyword around Hydro's Security Division. As director Ted Atherton puts it: "We'd be the happiest people on earth if we never had to assist in one arrest or lay one charge. We like to

think of ourselves as a preventive organization rather than one waiting to pounce upon an offender."

Mr. Atherton's men play down the idea that they're policemen. They are not. But with the price of copper hovering between 35 and 80 cents a pound, they must be constantly on their toes to safeguard Hydro's 68,500 miles of power lines.

During the first 10 months of last year, for instance, thieves carried off close to 25 tons of Hydro copper.

Not all the copper stolen is cut from poles. The biggest haul to date, two and a half tons, was appropriated from a storage depot. This case had a happy ending, however, at least for Hydro. Investigations by the security staff and police resulted in the arrest of five men.

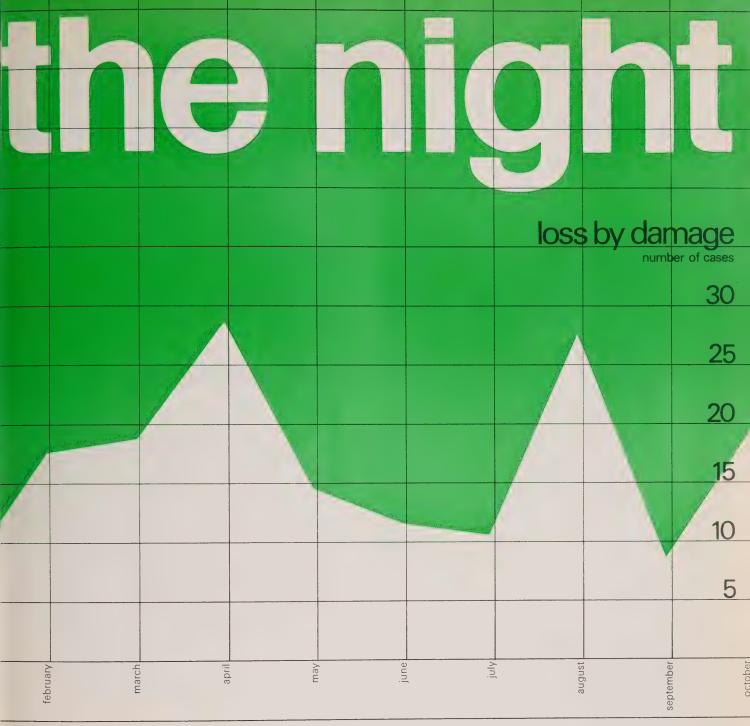
As Charlie Bishop, Niagara Region security officer points out, thieves get only half the going rate for copper when they sell it. "The people

buying the stolen wire take the other half become of the risk they're running."

Like other phases of modern business, Security Division has committed its "sales" fig and "customer activity" to a graph.

"Each peak and valley on the graph has as behind it," says Mr. Atherton, a distinguisl military-looking individual with greying hair keen policemen's eyes. "At the first of the year, weather is cold and there's a lot of snow on ground. This makes it difficult for would-be this to get around so that the number of occurrence relatively light."

In February and March, he says, there's a slupturn. Weather is milder and it's easier to around. The thieves are probably getting shor cash. The year's peak is in June. Even criminals to work in the balmy weather and normally price of copper is higher at this time, making theft more attractive.



efts nose-dive during the summer.

hat's because our patrols are more frequent the general movement of people, particularly be more remote areas, is heavier. This disages many of the thefts we could expect," the rity director explains.

lain in September, with fewer people on the e, the number of occurrences rises slightly. ugh October it tapers off because of the er weather.

favorite target for pilferers is the service wire cottages. These thefts may go unnoticed for a time because cottages spend much of their vacant. Even during the summer, owners may them only on weekends. To thwart this type ime security men have beefed up their patrols nd cottages, especially in Georgian Bay, the est-hit area.

trols have been increased generally over the few years and are proving their worth in

tangible ways. In a number of cases, security guards have actually come upon men in the act of carting wire away. At other times, they have spotted a gang obviously scouting an area for easy pickings. The mere presence of the patrol frustrates the gang's intentions.

Mr. Atherton points out that Hydro is not the only target for copper thefts. "Other utilities and large industries which use copper in manufacturing have also been hit hard," he says. Utilities throughout North America report greater losses since the price of copper increased.

For this reason, Hydro security co-operates extensively with other victims and local police forces.

Vandalism is also a large thorn in Hydro's side. During the first 10 months of 1966 Hydro had 170 separate incidents of damage to insulators and other equipment.

"With thousands of miles of power lines to look

after it's a wide open situation," says the security chief. "Ideally we nail persons in the act of damaging property; however, we usually discover damage after it has occurred. While it's difficult to determine responsibility, it's not impossible."

Like the theft of copper, damage cases have been put in graph form. The peaks occur in April when youngsters feel spring in the air and are anxious to try out their sling shots, air rifles or .22s. Again, in late August, these same kids get itchy feet. They're bored with their vacation and up goes the damage rate until they're safely back in school. The other peak comes when slightly older and wiser "adolescents" get bored and can find nothing better to do than shoot at insulators on a hunting trip.

It's not always the largest amount of damage that causes the most trouble, Dave McClymont, Georgian Bay Region security officer, points out.

(continued on next page)

Security Division's Marlene Sommers lines up prefocused camera before taking colored ID photograph of an employee. The camera is main unit of four-piece portable identification card laboratory. Finished product (top) does justice to Bonnie MacEwan's blond hair and hazel eyes. Ted Atherton's signature, which overlaps the photo and information sections, thwarts tampering.





"Last fall one frustrated hunter shot at an insulator, hitting it and the line. It was peanuts until later that evening when 25,000 people were blacked out anywhere up to an hour and a half. The damaged wire had severed in the wind, cutting power in the Alliston-Bradford-Barrie area. Even two hospitals were left without power."

But Security Division's work goes beyond guarding and investigation. "We try to get our point across through the use of posters, talks to school, church and social groups and just by having our cars out on patrol. This encourages people to recognize our problem and their responsibility towards it," says Mr. Atherton, who is in his third career.

In most cases, says the one-time RCMP constable and former security chief of the RCAF, damage is the result of thoughtless acts with no criminal intent. The effect, however, is the same.

Mr. Atherton asserts that the division relies heavily on the willingness of employees from all

departments to help them guard Hydro property. "Our people receive a great deal of co-operation," he adds.

Every Hydro employee comes into contact with Security Division at least once in his working life — the division is responsible for issuing identification cards to all employees. The system now used is a Canadian first and, complete with colored photograph, a card can be produced in three minutes.

The equipment used to produce the card is manufactured by Polaroid and consists of four compact units — a camera about the size of a portable television set, an electrically operated dryprocess laminator, a die cutter for trimming the card and a microfilm camera for recording the finished ID card and related data.

The new cards have many advantages over their predecessors. For one thing, the photo is an integral part of the card and not just glued on. The color of the photo's background signifies an

employee's status and level of security clearar To dissuade an attempt to switch photos and ca the signature of the issuing officer is automatic printed across the card.

A microfilm copy of each card is produced for files of Security Division, providing cross-refere by both name and number. This allows check against the actual card issued to an employee.

At present, cards are being issued to employer just joining the permanent staff. But in December 1968, when the old cards expire, all Hydro exployees will carry the new ID credential.

The men who guard Hydro have a full-time j on their hands. "Our primary role," says I Atherton, "is to protect Ontario Hydro again unlawful acts, both through our own effort and encouraging other Hydro personnel to co-operato this end.

"One thing, though, we can be thankful for. one has yet found a way of stealing a bagful kilowatts."



ightened parliament

ound and light spectacle will be staged twice a night on ament Hill, Ottawa, this summer as part of Canada's Centencelebrations. Spectators, surrounded by stereophonic sound its, will watch shifting colored lights play on the Parliament dings from a terraced mound on Nepean Point.

e mound, being built by the National Capital Commission at st of \$89,000, will seat 1,000 persons. A \$100,000 contract he lighting has been awarded to Donald Servant Electric, of wa. Three special-effect lights on a 10,000-watt circuit will eate the fire which destroyed the Centre Block of the Parlia-

anium shopping

t Buildings in 1916.

ario Hydro has agreed to buy approximately 6,500 short tons ranium concentrates to meet nuclear fuel requirements until

o Algom Mines will supply more than 80 per cent of the jum and Eldorado Mining and Refining the balance. In the years of the contracts Eldorado will also provide refining ices at its plant in Port Hope.

timates are that the contracts will be sufficient for the 000-kilowatt unit at Douglas Point nuclear power station the first two 500,000-kilowatt units of Pickering nuclear on due for operation in 1970-71. The contracts will also nit the introduction of an additional 500,000 kilowatts of ear-electric power each year thereafter to 1980.

hange of name

A. W. Manby Service Centre on Kipling Avenue, Etobicoke, been renamed the Ontario Hydro Service Centre. Administraand postal problems have arisen since it was given the A. W. by name in 1951 to honor the now retired general manager. adjacent transformer station will retain the A. W. Manby stification.

ting at tornadoes?

nember the rainmaker who shot a cannon into the sky to ger a downpour? Maybe he wasn't so crazy after all. Dr. non Rossow of the U.S. Space Agency's Ames Research tre in California, in his presentation to the Weather Radar ference in Oklahoma, has proposed stopping tornadoes by trocution

alling for a cannon to fire many wire-bound projectiles into a ling cloud, this process would stretch a thin wire field two or more between positive and negative charged clouds, ses which he believes cause tornadoes up to 500 miles an

hour. The wires, suspended on spools and held aloft by parachutes, would trigger a lightning bolt and stop the tornado by removing its energy source.

The scientist has produced tornadoes in his laboratory by whirling clouds of steam with an electric field, but he hasn't tried any actual experiments on the real thing as yet.

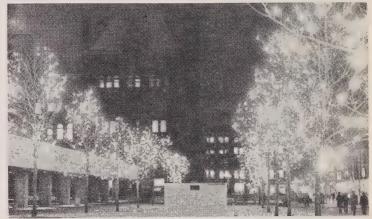
Boom proves a boon

A timber boom installed across the Lake Erie entrance to the Niagara River to prevent lake ice jamming the Niagara Gorge is now in operation for the third winter in succession.

Its job is to hold thin ice in position on the lake until it forms a solid sheet from shore to shore. If strong westerly winds force large masses of ice against the boom, the timbers will sink under the pressure allowing the excess to flow past. The boom will surface again when the winds subside.

Ice jams have caused little restriction at the Niagara's large hydro-electric stations in the past two winters, thanks largely to the boom. During the winter of 1963-64, before its installation, masses of ice passed down the river creating severe flooding and widespread destruction on both sides of the border.

Christmas at City Hall



Lights replaced the leaves in civic square.

Toronto's civic square put on a bright and shining face for the festive season, celebrating its second Christmas with a completely new mantle of lights. Clear lights decorated 24 deciduous trees on the perimeter of the square and a further 16 elsewhere. A white birch tree was lighted with 680 blue bulbs. The Christmas tree in the centre of the square was clothed with 1,200 multicolored lights. The new lighting was the brainchild of Property Commissioner Harry Rogers and his department, which did the actual decorating. A total of 7,700 lights were installed at a cost of \$6,000.

Learning to live with EDP

Staff problems were a recurrent theme as accounting personnel from Ontario's largest municipal utilities met last month to discuss the growing pains of the computer age.

During a panel discussion at the AMEU's first electronic data processing workshop in London, Del Pipher, North York Hydro, said there was always a certain amount of resentment towards new techniques. "Change is usually harder for older personnel to accept and it is better to involve these employees as much as possible in your planning," he added.

Mr. Pipher urged that staff be given a written guarantee of their job. "Once rumors start to fly everyone decides that the machine is going to dispense with the employee. In fact, their jobs will probably be of a higher level than before due to the necessity for retraining."

Delegates agreed it was difficult to find and keep staff trained



This is the way it's done at London PUC.

in EDP because the number of computer installations across the province had led to a shortage of skilled operators.

Emmett Campbell, also of North York, said that 13 Ontario utilities had punched card unit record equipment and several of them were now considering or in the midst of converting to medium and small-scale computers. Four other utilities were using the data processing facilities of a service bureau.

Summing up, program chairman Charles Kew, of London PUC, warned of the pitfalls of electronic data processing and set out a series of guidelines.

"A computer that is properly installed is a very valuable tool for your utility. However, it would be a mistake to leave this workshop with the impression that the installation of a computer is an easy undertaking. It takes a great deal of planning and a vast amount of good hard work," he said.

Workshop delegates also toured London PUC's data processing centre. Manager of the centre Don Grace is seen (left) explaining the accounting system to R. Broomer, of Etobicoke Hydro, and Don Shipston, Fort William Hydro.

Nuclear tally

New uses for the ubiquitous computer are found every day and the latest application at Ontario Hydro is a computerized system that will tally the 49,000-odd parts destined for each nuclear-electric unit at Pickering power station, just east of Toronto.

Information on everything from pipe fittings to pumps will be fed into the computer, which will keep track of parts right from the drawing board and the placing of the order with the manufacturer to their ultimate delivery at the Pickering site. Status of parts will appear in regular progress reports and it is hoped eventually to include a list of those items behind schedule.

Home on the range

More and more Canadians are at home on the electric range, according to the Dominion Bureau of Statistics. Electric power was used for cooking in 70.7 per cent of our homes last year compared with 69 per cent in 1965. There was also a rise in home freezers, clothes dryers and automatic washers.

While on the subject of statistics, the U.S. Federal Power Commission places Canada sixth in the world power production stakes. Here's how the top ten line up: United States, Russia, Japan, Great Britain, West Germany, Canada, France, Italy, East Germany and Sweden.

Bright idea

One of the best-lighted cities in Canada must be Edmundston, New Brunswick, where there's one mercury vapor lamp for every 10 citizens. It's all the result of a \$100,000 four-year conver program that will almost quadruple illumination and cut mai nance costs. Busy commercial areas and the five entrances to city are lit by 400-watt lamps while 175-watt lamps are installed elsewhere. But Edmundston has already decided that this will see its main street illuminated by 700-watt mercury lights

Britons leave the cold behind

One-side-at-a-time heating isn't good enough for the Br. anymore and thousands are surrendering the open coal fire central heating. It's experiencing a boom despite the government's economic freeze.

Big sales are reported by the National Electricity Coulombich has been promoting plug-in heaters that store cheap-electricity at night and release it in the daytime. About 330,00 these have been sold in a year.

Back in Canada, electric heating continues to make big strict A quarter of all single family homes, duplexes and triplexes to in Ontario and Manitoba last year are heated electrically. The a roaring trade, too, in British Columbia where the wear hovers around 40 or 50 degrees and there's need for a quick off type of heating.

Colonel leaves PUC



Lt. Col. A. A. Kennedy has relinquished seat on Owen Sound PUC after 21 year a commissioner. He said recently that felt someone new should have a turn office.

Col. Kennedy, who continues as Ontario Hydro commissioner, is a paperesident of the Ontario Municipal Electric Association and the Georgian Bay Municipal Electric Association. He was born a

raised in Owen Sound and is a sales specialist in steel castinand propellers.

During World War II, the colonel commanded the Hasti and Prince Edward Regiment. He served in England, Italy a Northwestern Europe and was awarded the DSO for gallant action. He is also a former commanding officer of the 45th A Tank Regiment in Owen Sound and a former officer of the G and Simcoe Foresters.

municipal briefs

London Separate School Board has chosen Sir Adam Boas one of 10 great Canadians to be studied this Centennial you Sir Adam was a mayor of London and first chairman of Onte Hydro.

Goderich PUC has received a plaque from the Electrical Utilit Safety Association for five accident-free years. Sixteen P employees also received safety awards at their annual dinner.

Dr. W. C. Tweedie, chairman of Rockland PUC for 33 year has died at the age of 71. He was Rockland's coroner for quarter of a century.

Peterborough Commissioner R. C. Johnston stepped do last month because his job calls for extensive world travel. I Johnston, six years on the commission and chairman in 19665, is manager of nuclear plant engineering at Canad General Electric.

Outlining its progress in a local newspaper, Scarborou PUC asks for criticism and suggestions. The utility now 175,000 Hydro customers using more than 200,000 kilows

rared with 20,000 customers and 43,000 kilowatts in 1953. **hty-seven-year-old Brian Longley** has been appointed cipal accountant for Ontario Hydro's Central Region. Mr. ey was born in Winnipeg and was educated at the University anitoba.

h Bay Hydro employee W. A. Hill has retired after 45 Hydro service. Mr. Hill joined Ontario Hydro's meter tment in 1921 and remained in North Bay when a Hydro hission was formed there in 1941. He became superintendent hsumer service and purchasing agent and was also involved es promotion.

umer service and sales engineer Charles Crease is g from Ontario Hydro's Central Region after more than 39

Crease spent 13 years as consumer service and sales eer for Georgian Bay Region, in Barrie, and took over his nt position in 1961. He will be succeeded by G. R. Currie, at nt rural service engineer in Ontario Hydro's Consumer ce Division, at Head Office.

Ing Hydro commissioners defeated in last month's municlections were William J. Fisher, a member of the recentlyed New Toronto PUC for 15 years and past president of A district 4, and R. J. Jones, a commissioner at Niagara for 12 years and district 5 OMEA president in 1962.

nsville Hydro has received an editorial pat-on-the-back the Beamsville Express. The editorial points out that the nission has repaid a \$39,700 debenture loan in only two and 11 months. The money was to cover the purchase of rio Hydro facilities in an annexed area of Clinton township. the editorial: "Beamsville Hydro is owned by the people of sville. They have reason to be well satisfied with the perance of this utility since it was first purchased from Ontario of in 1938."

bury Hydro held a banquet recently to mark nearly a ser of a million man-hours without a lost-time accident.

the beginning of 1967. In a festive mood, commissioners at final 1966 meeting, three days before Christmas, proposed for to Kris Kringle reminding him to call at the new address 367. Both the contractor (Whitney Construction) and the Hydro staff who did the electrical work were complimented ompleting the building in record time.

ghan Township voters have given their approval to a prolito establish a local electric system. In two separate queston the ballot, citizens were overwhelmingly in favor of the mis establishment and approved the borrowing of the necesmoney. The system is expected to be in operation by 1968.

Imanville PUC's Christmas gift to the town — power for lecorative lights on King Street. Commissioners Ivan Hobbs, id Carruthers and Ross Stevens decided to pay for the ssary power out of their own pockets when the town was d with a dark yule.

ernization in the home. The film was premiered at the fall erence of the Ontario Electrical League and will eventually vailable to the municipal utilities.

an Hydro has bought a two-storey building at the interon of William and George streets for office and storage poses.

kander B. Manson, former general manager and secretary tratford PUC and a past president of the AMEU, has died at age of 83. Mr. Manson, a University of Toronto graduate, ed in 1954 after 42 years' service with the PUC. Before that was an engineer with the city's Works Department.

don M. McHenry, Ontario Hydro's Western Region manat London, has been named first vice-president of the 00-member Association of Professional Engineers of Ontario. Two other Londoners, L. S. Lauchland, engineering science professor at the University of Western Ontario, and C. J. Moull, Ontario Hydro distribution engineer, were elected councillors of the association's electrical branch.

New lamps for old



From incandescent to fluorescent.

Lighter and brighter is the night in Hespeler. The local commission recently completed its program to replace outdated street lamps with modern fluorescent fixtures. The program was carried out in yearly stages with the final 42 new lights installed in 1966. Last to go was a 150-watt reflector type held here by Doug Johnson, Hespeler Hydro superintendent. The new fluorescent fixture being hoisted into the aerial bucket by Jim Dutch presents a sharp contrast between the two eras of street lighting.

An electrical dream

Plans for a hypothetical all-electric city were discussed at an engineering conference in Harrogate, England. All the city's public buildings are set amid large areas of parkland while homes for 250,000 persons are grouped together in urban units or villages in which no home is more than seven minutes' walk from a monorail station or seven minutes from the open countryside. Pedestrians and traffic are segregated in the city's major business section.

Supplies to industrial estates would be unloaded at central computer-operated areas and transported by automated electric tugs. Other points of interest: microwave cooking of frozen food delivered daily to factory canteens, electric cabs and buses and a fleet of electric cars and scooters for local government personnel.

A record to be envied



Thirty years a Hydro commissioner and never missed a meeting — that's the enviable record of Dr. V. S. Wilson, who stepped down from Etobicoke Hydro at the year end.

Dr. Wilson, a dentist by profession, has seen the utility develop from a sprawling semi-rural organization serving 3,700 customers into a giant with annual sales of \$12,000,000 and 61,000 residential customers. Always active in municipal affairs,

he is a past president of the OMEA, served as chairman of the OMEA-AMEU-Ontario Hydro Centennial Committee and was one-time chairman of the OMEA Resolutions Committee. He was chairman of Etobicoke Hydro for the greater part of his association with the utility and paved the way in Etobicoke for Ontario's first all-electric housing sub-division.

"It was the strong hand of Doc Wilson that guided us through the hectic post-war boom years and moulded us into the sixth largest municipal Hydro in the province," says Clark Wardlaw, present chairman of the commission.

Dr. Wilson was born at Beeton and was educated at schools in Toronto before embarking on a teaching career in North York. He served overseas with the Canadian Army in World War I and later enrolled at the University of Toronto, graduating in dentistry in 1923. He and his wife were recently guests of honor at an Etobicoke Hydro dinner marking his retirement from public life.

A cordless future?

Battery-operated appliances and equipment from vacuum cleaners to power drills may be practical in a few years thanks to an invention by Canadian defence scientists. Known as a coulometer, the device allows a nickel-cadmium battery to be charged in 15 minutes instead of 16 hours. This type of battery is expensive but has an extremely long life — some are still going strong after 10 years of service.

The coulometer is the brainchild of Dr. Ian Henderson, of Halifax, and is already being used by the federal health department in its survey of radioactive strontium-90 among the Eskimo population. Coulometer-equipped nickel-cadmium batteries are being installed in the RCAF's CF-104 nuclear bomber while the transport department has asked for similar batteries to provide emergency power for radio transmitters and lights on its icebreakers.

Research into cold-weather starting problems for vehicles and aircraft led to the invention.

E is for electricity



Comfort with a capital C.

There may be plenty of snow outside, but youngsters from the village of Palgrave are comfortable enough in their new all-electric school.

Palgrave Public School opened last September with seven classes and more than 170 students. Windows in the split-level structure are arranged in saw-tooth pattern to direct maximum light on the blackboard without glare. The unusual configuration also provides ample bulletin board space.

There are now more than 260 schools in the province with electric heating.

Nanticoke is the name

Earlier this month Ontario Hydro Chairman George E. Gathercole confirmed that the site of Hydro's new thermal generating station will be at Nanticoke, near Port Dover on the shore of Lake Erie. The plant bears the name Nanticoke. Initially, it will have a capacity of one million kilowatts from two generating units, but will eventually be expanded to double this capacity.

Site preparation will begin late this year, with permanent construction slated for the summer of 1968. The first two units are scheduled for service in 1972 and 1973.

Dig that digger



Brown coal for heat and power.

Down in the Latrobe Valley, 90 miles east of Melbourne, Aust they've got the latest in electrical appliances. For those interest in vital statistics it stands 100 feet high and weighs a mere 1 tons. It does all of 26 feet a minute on crawler tracks that tribute the weight so evenly they barely mark the ground, behind it all, of course, trails the inevitable power cable.

One of 12 of these dredgers, operated by the State Elect Commission of Victoria to scoop thousands of tons of brown from vast open-cut deposits, is pictured here. The commis has built three base-load power stations, designed to run or brown coal, near the deposits and these stations produce the quarters of Victoria's electricity. By 1974 they will generat per cent of the State's power needs.

Brown coal is an immature coal that is soft, crumbly and r and had its origin in the accumulation and partial decompos of vegetation. The Latrobe Valley deposits are the world's lar and the commission has developed a substantial brique industry to convert the coal into a high-grade fuel for dom and industrial use.

Topping up

Among the many and varied items on Ontario Hydro's an shopping list is that indispensable commodity, gasoline, year the commission estimates it will need well over two-an quarter million gallons to power its extensive fleet of cars, truand other motorized vehicles.

November energy production

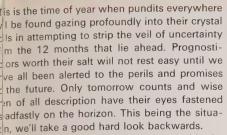
Primary energy provided by Ontario Hydro in Novembe totalled 4.30 billion kilowatt-hours, an increase of 9.9 pecent over the same month a year ago.

For the first 11 months of 1966, the total is 43.43 billion kilowatt-hours, up 10.1 per cent over the same period las year.

Adjusted for seasonal influences, primary energy demands in November was 4.16 billion kilowatt-hours, 2.6 per centrore than the previous month.

The seasonally adjusted total for November represents 49.91 billion kilowatt-hours at annual rates. This is 358.82 per cent of the energy demand in 1949.

off the wires



t's not that we couldn't keep up with the othsayers, mind you, but it's easier to avoid stakes our way and the field isn't so crowded this time of the year.

Let's take a close look at the 1917–1921 erad see how we stack up in the matter of progress. The thing the 1917–1921 era? Mostly because that's period covered in a fascinating scraptok of news clippings and advertisements bught to our attention by Moe Sheppard of Electrical Util.ties Safety Association.

A bit the worse for wear, these brittle, yellowing thits were apparently rescued at the very last ment from the mice inhabiting the nether gions of the old Welland Hydro service building. Ley had been assembled by the late H. F. Gearer, manager of Smiths Fall's Hydro during the period in question and boss man at Welland and 1922 to 1938.

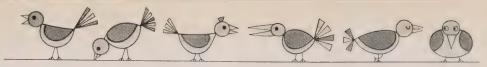
One thing is for sure — sales promotion is no hnny-come-lately, albeit the merchandise has anged, techniques are a bit more sophisticated prices, for the most part, are way way up.

Christmas ads snatched from the wee timorous asties in the Welland attic include a 1920 ducement to buy a new tree lighting set irroduced by the General Electric Company here "the lighting cord is wired in multiple stead of in series, so that if one bulb burns out e others are not affected." The set includes a ansformer giving 10, 14 or 24 volts "so that it ay be used to operate electric toys while not in the for lighting the tree."

Bless our soul, we thought the switch from teries" wiring was on a vintage par with the cent trend to short hemlines — a trend brought lithin 15 inches of perfection by the miniskirt. The ron by Wire" was another 1920 suggestion, with irons guaranteed by Hydro for five years."

"Joy on Christmas morning" could be assured if the purchase of a "White" phonograph of the purchase of a "White" phonograph and the copy. The potential purchaser was told would actually enjoy a long-term saving by anking up the phonograph and staying at home stead of going out on the town of an evening.

On Friday, May 14, 1920, the Woodstock 'ater and Light System made this modest claim the local paper: "Hydro will raise the national andard of health and happiness if you put it to ork in your home." Under an illustration of a dy lashed to a laundry tub, it asked: "Why would delicate refined women slave at the wash-pard over a steaming slop tub or crank eterally at the wringer. Hasn't father quit cranking the car?"



How sneaky can you get? The dear ladies have since embraced this suggestion with such enthusiasm that the delicate creatures now manage to outlive us by a decade or two on the average.

■ A nice chatty ad "Overheard at the Street Corner" was one of Welland Hydro's most effective series in 1923. Carried in the Tribune, one went like this:

"Mr. Query: Hello, Bill. Say, I just received my first account since I put in that Electric Stove. I think there is something wrong. It's four dollars and eighty-seven cents (\$4.87) for six weeks. Should it not be more than that?

Bill Watt (the meter man): Oh! No, that is about average where there is lighting, cooking, cleaning, washing, toasting and ironing done. You ought to put in that electric water heater I was telling you about.

Mr. Query: Oh! I was speaking to the wife about it and we decided not to do anything this fall. You see we have a water coil in our furnace so that it doesn't cost us anything to heat the water in the winter time.

Bill Watt: Ha! Ha! Ha! Ha! Ha!

Mr. Query: What are you laughing at?

Bill Watt: I bet the G.M. that fifty people would tell me that this month and you are the fiftieth and this is only the 19th of the month. Ha! Ha! Ha! Ha! Ha!

Mr. Query: Well, how does it? The heat is there anyway. It's got to go somewhere.

Bill Watt: Did you ever put a piece of ice on your tongue?... When you draw hot water from the tap, cool water passes into the water coil and chills the fire just as the ice chills your tongue... Mr. Query: I never thought of it that way. I'll see you again about that Electric Heater.

Bill Watt: Good night.

Mr. Query: Good night."

We'll echo those last sentiments. Not exactly New Yorker material but chances are they'll be getting a big boot out of our own jazzy TV commercials in the year 2011.

■ Other aspects of promotion show little change. These gems are from local Hydro promotions, circa 1918: "We are able to offer you cooking service at practically 1 cent per kilowatt-hour." "For convenience, economy, comfort and satisfaction, use electricity." And "Electricity for heating in the late spring and early fall . . . No lost heat . . . Simply turn it off when you do not need it."

Nor was the era without prognosticators of its own. Among the more illustrious, certainly, was Sir Adam Beck, the father of Hydro. Press reports from a talk he gave in Smiths Falls, May 13, 1920, included the following:

"Sir Adam believed that both the governments at Ottawa and Washington were sympathetic to this project (St. Lawrence) which would not only supply in all four million h.p., but would make the Great Lakes system the Mediterranean of the continent.... Sir Adam looked forward to the time when the St. Lawrence would be developed for navigation and for power to such an extent that ocean-going ships would come right into the Great Lakes . . . and that this great

natural waterway would be the means of saving the people of Eastern Ontario the equivalent of ten millions of tons of coal annually."

And there was this observation: "Sir Adam stated that he had been offered the position of Minister of Power, but had refused it, as he felt that patronage would creep in with politics and the usefulness of the Hydro system would in great part be destroyed."

Cost-wise, progress has been steady in that we now get to carry more cash around in our jeans — and we need it. Women's nightgowns, "kimono style" were advertised at \$1.49 in 1920 and special "Hydro Irons" were going at \$4. Electric ranges were advertised at \$45 up. They were asking \$3450 for a solid brick dwelling "equipped with bath, furnace and lights," in a desirable central location.

On the other hand, a 60-watt frosted Hydro light bulb brought 60 cents which would hardly be considered a bargain today. And wages left something to be desired — namely money. The Kingston Board of Education announced that, forthwith, the minimum annual salary of public school women teachers was being raised from \$650 to \$800. The salary of Principal Sliter of the Collegiate Institute was raised to \$2,900.

Medically speaking we have actually been going backwards if the patent medicine ads can be taken at face value. One woman described as "having to climb stairs on her hands being too ill to walk upright," was restored to full vigor after a few swigs of a popular vegetable compound. She was then able to "shovel dirt, do cement work and raise hundreds of chickens and ducks."

A home treatment provided by the Dr. Bellman Medical Company of Collingwood was said to cure such trivial medical complaints as tumors, lumps and cancer entirely without pain. Leonard's Ear Oil was available for rubbing behind the ear to relieve deafness and head noises.

Morally, things haven't changed much. A mellowing clipping from the front page of the St. Catharines Standard describes the antics of one William Silverthorne on the occasion of his first visit to the Garden City.

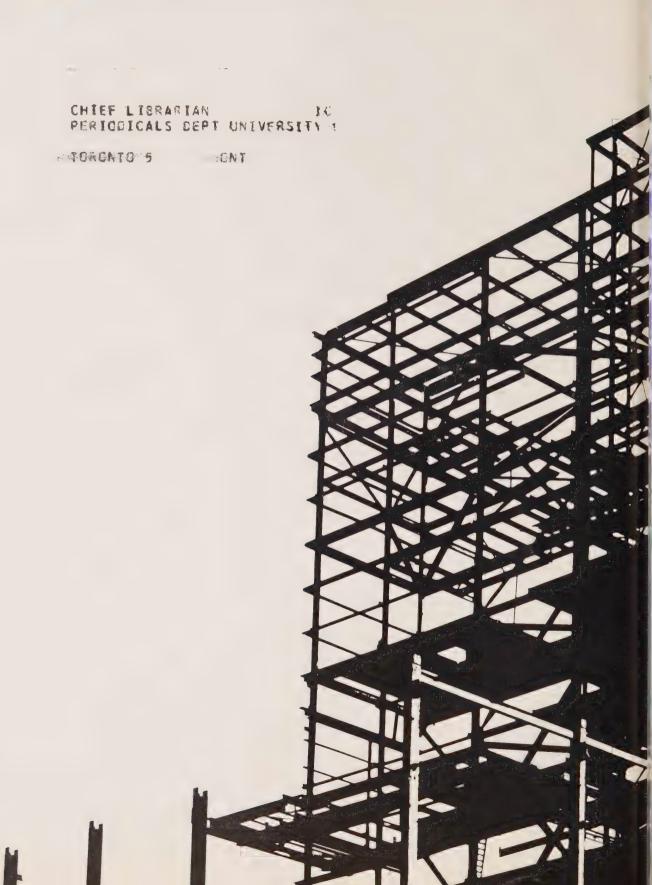
"Silverthorne came to the city and purchased three kegs of wine," according to the account. "Later he met Robert Brown, colored, and after enquiring from Robert if he knew any women, went to Brown's house and there opened one of the kegs."

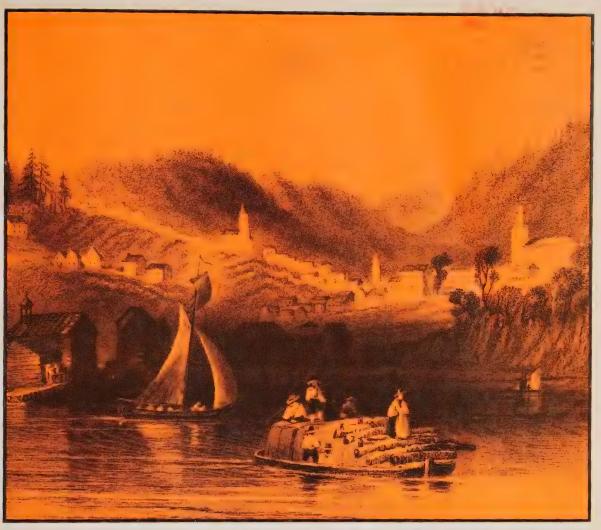
To make a long story short, both ended in the hoosegow for infractions of the liquor control act and other assorted misdemeanors of a nature very similar to shenanigans still popular in some quarters today.

We could go on to a more detailed analysis of this jazzy era based on Mr. Shepherd's mouse fodder but we'll be kind. Suffice it to say that if these tattered tidbits were to be found 1000 years from now by some little green archaeologist, he'd have no trouble spotting the relationship between the Black Bottom boys of half a century ago and the beatniks of today. And he'd get the idea electricity was a bargain in both eras.



Hydro plans to double generating resources within eight ye





ontario hydro news

february/1967
•by 1867 they were running out of wood
•front row centre-and for free
•she'll do sixty miles an ampere





Ontario hydrocal news february 67

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the cover

Would you believe, Port Hope? This is the way it looked around 1840 and by the time of Confederation it was a bustling port. Lumber was the chief commodity and in 1866 it was visited by some 1,350 steamers and sailing vessels.

The engraving is from a drawing by W. H. Bartlett, published in Willis's Canadian Scenery.

For other aspects of life in Ontario before the advent of electric power, please turn to page 18.

editorial board

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Silhouetted against the evening sky and mirrored in the murky wate of Hamilton Bay, one of Dofasco's big blast furnaces proclaims the city's industrial status for miles around. And while a relatively small percentage of our steel requirements is produced in electric furnace electricity is the power behind the scenes at this essential industry.

A steel mill will consume enough electric power to supply a cit Giant motors drive the rolling mills and direct current is used to makin plate. Electricity helps make oxygen to speed steel-making and powers the cranes and energizes magnets. For more about the powbehind steel, please see page 12.

take a peek at a city of the future. Not a nce fiction writer's dream of the distant future, y cocooned in its weatherproof domes and -crossed with moving sidewalks, but a city n like Toronto, New York, Brussels or Tokyo today.

ams of traffic pour off the expressways and brough the shadows of downtown canyons. city bubbling with life, vital and effervescent, here is something missing, something finable . . .

he lack of noise. Only the soft swish of marks the zig-zag passage of compact cars umbering trucks. And the air is fresher, onger do the stench of gasoline and diesel he exhausts assail the nostrils.

asy? Naturally. But the fact that could form our swirling cities out of all recognition

to their cacophonic and stifling, smog-soup selves has sprung into prominence after years of dormancy. That fact is the electric automobile.

Revival of interest in a mechanical contrivance long relegated to the museum is due largely to the urgency of the air pollution problem. Only weeks ago Frank Stead, a leading Californian health official, made the headlines by calling for a state-financed campaign to convince the public that gasoline-powered vehicles must be banned before 1980.

He warned that California's urban and industrial growth in the next 15 years will be such that pollutants discharged by the factories alone, even if they are fully controlled, will overtax the air's ability to absorb waste. There will be no additional capacity, he said, to absorb the vastly increased pollutants discharged by automobiles.

Professor Morris Nieburger, of the University of

California, says that if present trends continue we could well be annihilated by filthy air within the coming century.

Devices to reduce air pollution will be fitted on all 1968 model cars in the United States, but the increase in traffic is expected to negate much of the benefit. According to the National Council on Air Pollution, the nation's motor vehicles already account for half of the 135 million tons of pollutants poured into the atmosphere each year.

Even before the furor reached its present level, however, the gargantuans of the automobile industry were taking a serious backstage look at the prospects of developing a fumeless electrically-powered car.

A more efficient storage battery would solve many of their problems overnight and Ford is

how soon will we be driving better electrically?

by Les Dobson



Antique car buff Bob Lane poses beside 1917 electric.

me quie dution evolution

claiming a major breakthrough with a sodiumsulphur battery having an energy density about 15 times that of the conventional lead-acid battery. The new battery will operate at a temperature about three times that of boiling water and will contain liquid sodium and liquid sulphur separated by an ionically-conducting ceramic.

Scientists estimate it will drive a Ford Falcon 134 miles at 40 miles an hour compared with a range of only 21 miles using conventional batteries.

Michael Ference Jr., Ford's vice-president for scientific research, says: "While still in the early stages of development, our new battery system promises to meet one of the needs of an efficient, low-cost, compact, urban-suburban electric vehicle requiring only over-night charging."

Overnight charging — statements like this harbor tremendous portent for the electrical industry.

Imagine it. Millions of cars plugged into the power supply for recharging each night. A substantial load for the limbo hours means fuller use of utility resources and lower average costs. The attraction is obvious and in the last two years the Edison Electrical Institute, representing 250 American utilities, has supplied \$600,000 for research on a promising zinc-air type of battery.

Estimates of power consumption if the electric car were to gain wide public acceptance naturally vary, although one source claims that a 3,000-pound car clocking an annual 10,000 miles would use 5,000 kilowatt-hours a year. This would place the Canadian driver's annual bill in the neighborhood of a mere \$50.

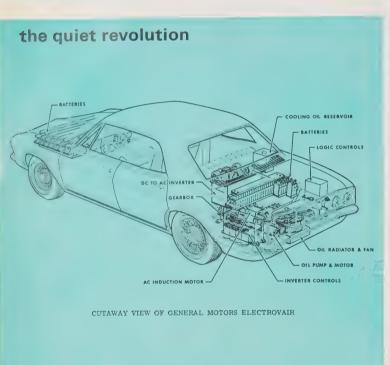
But there's a catch. As Jack Cassan, an Ontario Hydro research engineer, points out: "What is often overlooked is that taxes account for a large part of the fuel costs for a gasoline-powered car. Revenue for building roads must come from somewhere and this raises speculation as to what the true cost of running an electric car will be."

Where does development now stand?

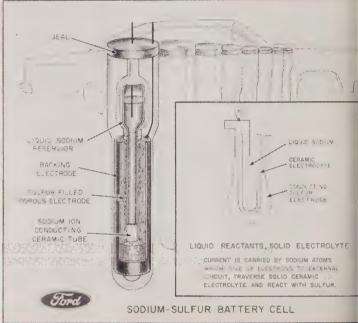
Ford is busy in both Britain and America on small electric "city car" designed to carry two adults and two children. A prototype, powere initially by conventional batteries, is expected completed in Britain this spring. The cars will later be tested in the United States.

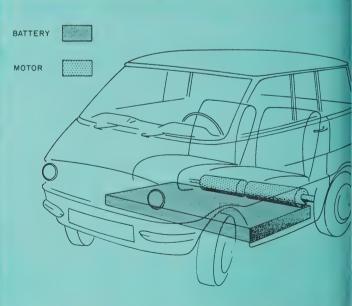
General Motors has two electrically-propelle vehicles in existence, a battery-powered pass car called Electrovair II and a fuel cell Electro

Electrovair operates from a silver-zinc batter, pack and can travel 40 to 80 miles between recharges. Its performance is peppy and it w accelerate from a standstill to 60 miles an h









FORD ELECTRIC CITY CAR CONCEPT

onds. Its top speed is 80. Although ive, silver-zinc batteries deliver high peak and have good storage characteristics. unately, they wear out after 100 recharges.

van presents an alternative to battery It draws electricity from a liquid hydrogenoxygen fuel cell system and has a range

oxygen, however, has a tendency to boil at minus 297 degrees fahrenheit and liquid en at an even chillier minus 423 degrees, poses certain problems for the home nic. Any combination of the two gases plosive possibilities and the oil companies own to be favoring a fuel cell operating quid hydrocarbon.

d N. Cole, executive vice-president of Motors, says: "Electrovan shows that

electrical propulsion by fuel cells is technically feasible. But size, weight and cost of the power source must be radically improved to make it a practicable vehicle."

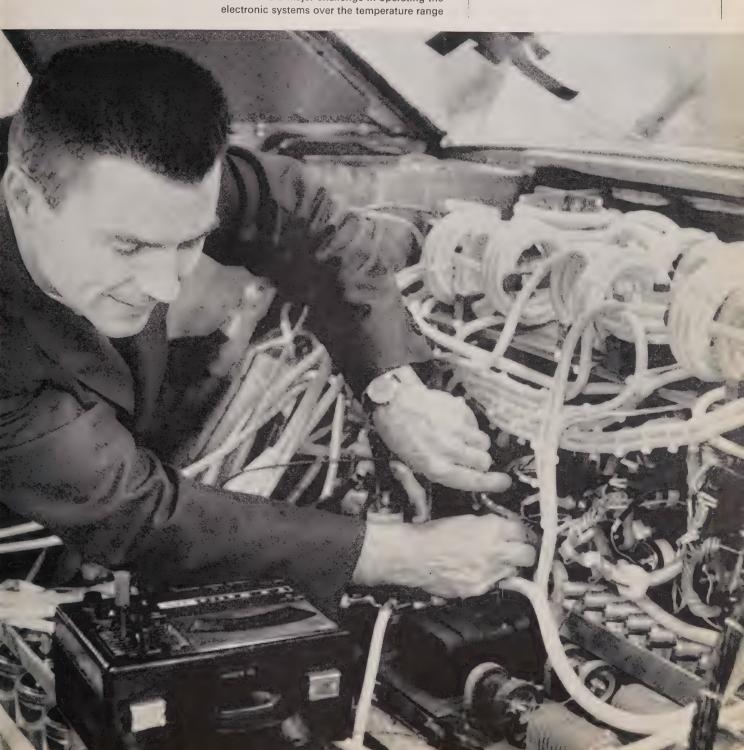
GM is also experimenting with a rechargable lithium-chlorine battery cell which will operate at a temperature of about 1100 degrees fahrenheit.

But there's more to building an electric car than meets the eye, as one of GM's engineers points out.

"Such things as starting and stopping with the simple turn of a key required the development of a completely new electro-mechanical system," he says. "We had to provide a fail-safe capability in case the power should lock on, the motor should overspeed or the control lever be inadvertently thrown from forward into reverse while driving down the road.

"We found a major challenge in operating the

Sketches show the Ford and General Motors electric car concepts with the Ford sodiumsulphur battery and the GM experimental lithium-chlorine battery, both of which will operate at high temperatures. Engineer, below, checks out complex solid state switching components on GM's electrified corvair.



normally encountered in a car. We had to change our electronics boxes like a woman changes hats. We had one for the summer and one for the winter.

"We also found that we would have to handle at least 400 volts and 300 to 400 amps in our electric system, which is a sobering thought to automotive engineers who are accustomed to thinking of anything over 12 volts as high," he adds.

Another problem peculiar to the northern states and Canada is the question of in-car heaters. A solution to this has yet to be found. Conventional car heaters wouldn't work and any electric heater would seriously reduce the vehicle's range.

Yet the electric car is not exactly new. A handful of electric taxicabs were trundling in stately silence along the promenade at Brighton, England,

as far back as 1887 while an electric car was exhibited in Toronto in 1896.

By the turn of the century, there were more electric cars in North America than ones with internal combustion engines. Several Baker Electrobat cars — no relative of the Batmobile — were on the roads in 1899 and in 1902 Baker produced its Torpedo, said to be capable of 140 miles an hour. Regrettably, it plowed into a group of spectators during a demonstration.

About this time there were 300 electric taxicabs in New York City alone. Like most electrics of the day, they could do about 50 miles without recharging or replacing the batteries. With batteries clearly losing the battle with gasoline, a Toronto citizen with the appropriate name of E. M. Watts in 1925 urged the electrical utilities to promote

electric trucks. He calculated that city deliver trucks were actually in motion about two hoevery eight-hour day.

Most of the 200 electric vehicles on Canadia roads today are used for such stop-and-go services as milk delivery. Their chief virtues a easy operation and economy. There is no idli of motors and, consequently, no waste whe driver makes his calls. Cost of overnight char varies between 10 and 25 cents. About one-of all lifting vehicles produced for industry ar now battery-operated.

It's a different story in Britain. According to t British Electricity Council there are 40,000 ele trucks in that country delivering milk, bread, laundry and other items. It predicts that with 10 years there will be a million battery-driver automobiles in operation.

Four experimental electric cars are already wh through London's congested streets. Two are



erted British Motor Corporation Minis while vere specially engineered by Scottish Aviation eel Engineering. The later models are ted to cost less than \$1,000 when mass ced, although their range is limited to 30 at a top speed nudging 40.

do the experts foresee for the all-electric? Well, there'll be no more winterizing or or troubles — in fact, no cooling system at all. 'll be no more knocking, missing, ring jobs, anges or any engine trouble as we now it. Drivers can expect a fraction of the enance and at least triple the life expectancy ir present automobile.

lectric car is generally seen as a commuter le for city driving while gasoline-powered will still be used for lengthy trips. World champion driver Jack Brabham thinks the car of the future may have two engines — electric and gasoline — for town and country driving respectively. On long runs, the gasoline engine would quickly recharge the batteries for the next town.

The electric car has still a long way to go. People resist change and, even after widespread acceptance, it may take the automobile industry a dozen or so years to mass-produce a new kind of car. Yet the motivation for building one is there.

Thomas Edison once teamed up with Henry Ford to build a battery-powered car. But the problems of low speeds, limited range, high cost and great weight scotched the venture. Today, however, the electric car appears a more attractive proposition. No one seriously doubts the ability of modern technology to solve the inherent problems. And once they are resolved, it will be up to the electrical utilities to keep them on the go.

Most of the 200 electric vehicles on Canadian roads today are used for such stop-and-go services as milk delivery. Trucks run on batteries all day, recharge for few cents on power supply at night. Picture below shows Ford scientists at work on the sodium-sulphur battery system, which it says will store up to 15 times the energy available from present conventional batteries.



be our guests at pickering g.s.

Top left: Ontario Hydro Chairman George E. Gathercole examines a uranium fuel bundle with Ajax Mayor H. M. Smith, left, and Harry Polak, Reeve, at a preview tour of the new information centre.

Top right: R. J. Boyer, centre, second vicechairman of Ontario Hydro, measures radiation from his watch dial as William Humphries of a local ratepayers' group looks on. Dave Bate of Hydro handles the controls.

Bottom: Project Public Relations Officer Don White points out construction details from the observation deck for officials and the press. The deck affords full view of Pickering development. Ringside seats at one of Canada's foremost construction dramas are being offered free by Ontario Hydro and early indications are that the proceedings will be watched from a full house.

Opened in mid-January, the information centre at Hydro's \$266 million Pickering nuclear-electric plant, 20 miles east of downtown Toronto, not only provides a first class view of construction activity but tells the story of atomic energy and its productive uses in a simple and colorful presentation.

The million kilowatt-plus Pickering station is the first nuclear-electric plant to be built, owned and operated by a Canadian utility.

Two-thirds of the 6,500-square-foot information centre building is devoted to displays while the remainder comprises a 150-seat auditorium where visitors see a color film depicting how nuclear energy is harnessed for the benefit of man. Film of Douglas Point and NPD nuclear plants is employed together with animated drawings.

In the display area, art work, photographs, diagrams, text and artifacts are used to outline the nuclear story from the discovery of X-rays in 1895 to the present. One section deals with radioisotopes and their use in medicine, agriculture and industry. Other displays feature samples of uranium and uranium fuel. To show the difference between ordinary concrete and the heavy concrete used in the reactor walls to shield against heat and radiation, two blocks of the same size enable visitors to compare the weight.

Elsewhere visitors are invited to test the radiation output of the radium on the dials of their watches with a geiger counter. At the centre of the display area is a rotating scale model of the plant as it will appear in 1970 when first power fron 1,080,000-kilowatt station is scheduled.

Paralleling the theme of the film, exhibits exhibits and the workings of nuclear-electric p. The role of nuclear power in Hydro's operatic also outlined.

Visitors can preside as sidewalk superinten on the observation deck at the rear of the ci The entire construction site, with Lake Onta the background, can be seen from this valpoint.

If the first few days of the centre's open prove a criterion, Hydro's estimate of 100 visitors per year will fall short of the actual. On opening day over 700 visitors were sk through the centre. Two days later seven st tours were conducted.

Hydro views the centre as a ready-made of room wherein Ontario school children and a alike can learn about the power of the Trained guides are provided and casual visito welcome from 9.00 a.m. to 4 p.m., seven d week. Group tours should be arranged in adwith public relations officer Don White a information centre.

Sidewalk superintendents get the red carpet treatment when the take over at Hydro's giant nuclear-electric project under construction east of Toronto. Motion pictures and exhibits in the nuclear story before visitors proce to the observation platform. Trained guides are provided and visitors are welcome from 9 a.m. to 4 p.m., seven days a welcome from 9 a.m. to 4 p.m., seven days a welcome from 9 a.m. to 4 p.m., seven days a welcome from 9 a.m. to 4 p.m., seven days a welcome from 9 a.m. to 4 p.m., seven days a welcome from 9 a.m. to 4 p.m., seven days a welcome from 9 a.m. to 4 p.m., seven days a welcome from 9 a.m. to 4 p.m., seven days a welcome from 9 a.m. to 4 p.m., seven days a welcome from 9 a.m. to 4 p.m., seven days a welcome from 9 a.m. to 4 p.m., seven days a welcome from 9 a.m. to 4 p.m., seven days a welcome from 9 a.m. to 4 p.m., seven days a welcome from 9 a.m. to 4 p.m., seven days a welcome from 9 a.m. to 4 p.m., seven days a welcome from 9 a.m. to 4 p.m., seven days a welcome from 9 a.m. to 4 p.m., seven days a welcome from 9 a.m. to 4 p.m., seven days a welcome from 9 a.m. to 4 p.m., seven days a welcome from 9 a.m. to 4 p.m. to







electing

province with 412,000 square miles of ory, selecting a generating station site t seem a cinch but many factors must onsidered. While nature determines o sites, economics governs location of nal stations.

A car kicks up the mid-summer dust on an unsurfaced road leading to the Lake Erie shoreline. In spite of the open windows it's uncomfortably hot inside. One of the passengers is looking at a map.

"Pull in here," he says suddenly. The driver stops the car, kills the engine. The five perspiring occupants get out. From their appearance they might be city businessmen. In fact they're engineers.

"This is the fifth possibility," says the man with the map. "You can see the rocky outcrops over there and the shoreline isn't too sandy. Unfortunately, the site would involve a whole string of property deals."

A refreshing breeze wafts gently off the water and across the desolate landscape. A decision will not be reached today. But whether the roar of the bulldozer and the earth-shaking thump of the pile-driver ever transform this barren 500 acres into a pulsing power center will depend largely on the recommendations of these men, all with a lifetime of engineering experience.

Two years may pass before a final choice is made. And at that time the Ontario Hydro chairman will likely release the news at some important provincial gathering or at a press conference.

He may announce that a site has been selected and that construction is about to commence, or he may simply say that a site has been acquired for a thermal-electric station to be built sometime in the future. Because of the similarity in site requirements for thermal plants and certain large industries, power station sites in rapidly expanding areas must be acquired while they are available.

Zooming power demands have, in fact, given rise to a never-ending hunt for places to build multi-million dollar coal and uranium-fuelled power stations. Even now Hydro planners are calling for the construction of five or six thermal-electric giants between 1975 and 1985 to cope with an electrical load that doubles every decade.

With the province sprawled across 412,000 square miles, site-choosing might seem like child's play. The unhappy truth is that a modern power station is one of the most difficult industrial plants to place.

Says H. P. Smith, an engineer in Hydro's System Planning Division: "Unlike a hydro-electric station, the location of a thermal plant is not

fixed by nature. But the factors to be considered in selecting a site are usually more stringent."

For one thing, thermal plants enjoy a prodigious thirst. A 2,000,000-kilowatt coal-burning station will require 600,000 gallons of water a minute to keep cool while a nuclear installation requires even more. The supply must be kept reasonably free from ice, weeds and algae, which can clog intake screens and shut down a generator within

Water plays another vital role in the operation of the province's coal-burning stations. At the moment there are strong economic incentives to locating them on the Great Lakes system to permit the delivery of coal by ship rather than on inland lakes and rivers, which would require the coal to be shipped by rail. However, the possibility of rail transportation is not ruled out.

The Lakeview and R. L. Hearn stations are on the Toronto area waterfront while the J. Clark Keith plant is on the Detroit River. Rising alongside the blue waters of the busy St. Clair River is the Lambton generating station while the Thunder Bay power station is at the Lakehead. Latest to be announced is the Nanticoke project on Lake Erie.

Lakeview is destined to become one of the most powerful thermal-electric generating stations in the world. Several million tons of coal may be unloaded there during the shipping season, which brings to mind another factor in site selection - space.

Large stations require between 150 and 500 acres of land depending on coal storage needs, the amount of switching equipment and whether or not it will be necessary to dump fly ash on the site. One of these giant plants will produce more than a quarter of a million tons of this ash a year. Nuclear installations take up less room, but regulations require the reactor to be at least 3,000 feet from habitation.

It is also good business to locate a generating station as close to the customers as possible. Not only are transmission lines expensive to build but the farther electricity flows, the higher is the loss of power.

Other factors enter. Will the earth stand up to the combined weights of the coal pile, heavy generating equipment and the building itself?





a modern thermalelectric station is one of the most difficult plants to locate

Site acquisition involves people and Hydro enjoys an enviable reputation for fair dealing in property matters. Coal transportation and storage are vital considerations in site selection as are rail facilities for heavy equipment. How much will the site cost having in mind land value and property negotiations? Are there convenient railway facilities for bringing in heavy material and equipment? What are the mineral rights on the land under investigation?

One by one Hydro's system planners and design engineers eliminate the less feasible sites. Once the search has narrowed down to, say, three possibilities, each site is allotted points on the basis of these and other factors. The points are added up and options taken on the most favorable property. Only then can detailed investigation such as drilling begin.

Other advantages to building a power station close to populated centres include the availability of a large pool of skilled labor, good machine shops and a nearby supply of materials. But there are drawbacks and most of them are related to public acceptance.

Pollution cannot be tolerated and there are aesthetics, power lines, and noise levels to consider

Water pollution is no problem at Hydro's thermal stations as the vast quantities of cooling water are returned to lakes and rivers a few degrees warmer but otherwise unchanged.

Electrostatic precipitators installed to combat air pollution are 99.5 per cent efficient for all new stations. That errant .5 per cent is carried into the upper atmosphere by tall chimneys. Clouds seen wafting from these stacks on a clear, cold day are mostly steam.

Even to the casual observer, the outward appearance of our power stations has undergone a startling transformation. In contrast to the plain brick structures of a few years ago, today's stations are clad in a variety of colors with aluminum, steel, asbestos and glass.

Says one engineer: "More and more attention is being given to architectural considerations. The effect is to make a new plant a tourist attraction as well as a source of power."

There is nothing haphazard about the way Hydro goes about selecting its generating station sites. Consistent with public approval, economics pin-point their location. Power must be available the minute it is required and at the lowest possible cost.

It's up to the planners and design teams to decide where, when and what.

the power beh



d steel

by Hal O'Neil



Somewhere a horn blows and a ladle swings into position beside the furnace. Another blast from the horn and the furnace tips, pouring forth what was recently a fender crumpled when someone's wife didn't quite make it through the garage door. The fender, along with 50 tons of other scrap metal, is being reborn as liquid steel.

Minutes later the ladle of molten steel is hoisted to the top of an 80-foot tower. A stopper is pulled and the fiery liquid pours through three moulds and down the tower, emerging at the bottom as finished steel in continuous billets. Automatic torches slice the billets into preset lengths.

Such is the magic of the modern melt shop. And across the province electricity is playing a major role in the steel industry so vital to our economy.

At Whitby, for instance, electric arc furnaces are used to melt scrap metal at the recently built plant of the Lake Ontario Steel Company (Lasco for short). Powerful electric currents surge in a 7,000° arc from each of three graphite electrodes to the scrap. Bits of old cars, rusting iron bars and other junk are reduced to a molten pool simmering at around 3,000 degrees fahrenheit.

But electric furnaces account for only a small portion of the Ontario steel industry's power requirements. At the Hamilton works of the Steel Company of Canada (Stelco for short), the more traditional coke-burning open hearth and blast furnaces are used. Oil and gas frequently augment coke as a fuel. Even so, Stelco consumes about as many kilowatt-hours in a year as the entire city of St. Catharines.

Electricity is used in literally hundreds of ways at Stelco. Motors with a rating up to 18,000 horse-power are used to drive machinery in the plate mill; low direct current is used to make tin plate.

Next door to Stelco is Dominion Foundries and Steel (Dofasco for short), another giant in the steel industry as well as a big user of electric power. Dofasco employes five electric furnaces at Hamilton. They range from a huge 50-ton behemoth used to melt scrap to one of a few hundred pounds for special alloy study.

"Doc" Stephens, Dofasco's superintendent of electrical maintenance, has seen the company's demands grow from 8,000 to 105,000 kilowatts in his 28 years of service. "Our use of electricity has grown in proportion to Dofasco's growth," he says.

Large amounts of oxygen speed the steel-making process and electric power is used to produce the oxygen by compressing and liquefying ordinary air. Says Mr. Stephens: "Five hundred kilowatts produce one ton of oxygen, one ton of oxygen makes 10 tons of steel."

Stelco electrical engineers point out that the company doubles its electrical needs every seven or eight years. This rate of growth applies pretty well throughout the steel industry. It compares with Ontario's electrical needs as a whole which tend to double every 10 to 12 years. When Dofasco decided to construct new offices on Burlington Street a few years ago, electricity was chosen to both heat and cool them. At that time, the building was among the largest in North America using electric heating. Dubbed the "showcase of steel", it is situated in the midst of Hamilton's heavy industry where it looks a little like a fairy princess at the boiler makers' picnic.

amid the fire and din of a modern steel plant flows enough electricity to supply a fair-sized city

A mantel of porcelain-enamelled steel sets the building apart from conventional structures.

Steel is used in such unusual places as facing blocks, ceilings and partitions as well as for the more traditional pilings and girders.

According to Dofasco, an electric heating and cooling system was chosen for its economical installation and minimum maintenance. The size of the installation called for the largest single electric heating coil produced in Canada up to that time

while an entire sub-station supplies power for the system.

Six transformers are used at Lasco, two for the melting process, one for the mill line and three for general service. Some 40,000 amperes are used in the two electric-arc furnaces and with such large amounts of current flowing through the system, the graphite electrodes burn off at a rate of six feet for every 50 tons of steel. Each of the three electrodes is automatically and continuously positioned to give the optimum arc.

Joe Mulcahy, Lasco's chief electrical engineer, explains that the company is planning to build its own transformer station with the co-operation of Ontario Hydro. "Because of our high demands, power will be brought into the station at 230,000 volts. This will be one of the highest-voltage independent transformer stations in the province," he says.

At present the furnaces are on a separate 44,000-volt feeder.

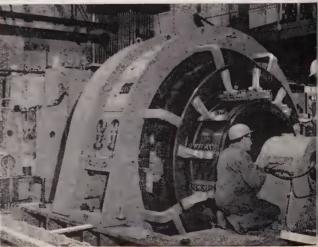
Both Dofasco and Stelco receive their power direct from Ontario Hydro at 13.8 kilovolts. In some operations the voltage is used at this hilevel, but in most applications it is stepped do to 550 or 575 volts. Although the electricity arrives as alternating current, part of it must be converted to direct current to power such item cranes, electro-magnets and variable speed drives.

While 25-cycle power may have gone out of style across Ontario generally, it is still finding use at Stelco and Dofasco. At Stelco about quarter of the power consumed is 25-cycle ar at Dofasco about five per cent.

During the 1950s, when all municipalities we being converted to the higher frequency, it w







ided to skip over most of the steel industry's ssive equipment. The cost of the changeover s high and subsequent years would make the cycle equipment obsolete. It would then be laced with 60-cycle machinery.

niltonians can also thank electricity for keeping ir air as clean as possible. Electrostatic pretators pick out solid particles from the gases discharged by the chimneys of the el-making furnaces.

co employs electric heaters at storage bins to p chemicals and waste dust from the precipitafrom freezing in the colder months. This makes erials easier to handle.

ndreds of miles away, where iron ore is stled from the mines of Northern Ontario and rador, the kilowatt also plays its part. Many items of mining equipment such as shovels and bucket cranes are powered by electricity — mine operators don't have to worry about bringing in fuel to a distant site, they just "plug" a shovel into the electrical supply.

Looking into the future, Lasco's Joe Mulcahy predicts that electricity will play an ever-increasing role in the making of steel. "I think that within 10 years, all steel companies will be operating with electric arc furnaces as a major production tool," he says.

- Steel is tapped from one of Dofasco's oxygen steelmaking furnaces and poured into moulds for the production of ingots.
- Slag is pulled from one of Lasco's 50-ton electric arc furnaces. A new charge of scrap will be dumped into top of furnace for another "heat."
- 3. This 10,000 h.p. motor was recently installed in Dofasco's hot mill as part of company's continual expansion.
- One of Stelco's 191 coke ovens disgorges its contents into a hopper car. Coke, a vital steelmaking ingredient, is made by roasting coal in these airless ovens.
- Dofasco's modern cold reduction and temper mill can process coils of steel at speeds to 60 m.p.h. It is equipped with sophisticated electric control systems,





New District 5 OMEA officers, from left, seated: A. J. Bennett, 1st vice-president, St. Catharines; W. F. Rannie, president, Beamsville; J. Wratten, Jr., past president, Brantford. Standing: D. G. Robertson, Lynden; John Krestel, Port Rowan; Andrew Frame, 2nd vice-president, Burlington; W. S. Jennings, Niagara-on-the-Lake; S. J. Chapple, Stoney Creek.

Chairman George E. Gathercole presented an award to John Krestel of Port Rowan for his 15 years' service as a commissioner. Mr. Krestel, a member of District 5 executive, has been chairman of the local PUC for six vears.





resolutions and home improvements

Meeting in Brantford, District 5 OMEA discusses relocation costs and electrical modernization

Greater financial assistance for municipal utilities required to relocate power lines and lights in conjunction with highway projects was urged at the District 5 meeting of the Ontario Municipal Electric Association at Brantford.

G. L. Burley, Niagara Falls, said his utility had spent considerable sums in connection with two major highway programs.

"All we can recover from the Department of Highways is 50 per cent of the labor costs and most of us feel this is a very small portion of the expense," he said. "The balance has to be passed on to our customers. We believe this to be unfair because the enlarged highways are used by tourists and people from other cities.

On his suggestion, a resolution was approved for consideration by the annual meeting of the OMEA in Toronto. The motion urged that the OMEA investigate ways and means of providing better financial assistance to the utilities through the highway authority.

A further resolution asking the provincial government to include in any further regional government studies an assessment of possible additional costs or potential savings in an enlarged Hydro

Making the proposal, Andrew Frame, Burlington,

said it was really a request to clarify the terms of reference of the regional study commissioners.

'In each of three recent regional government reports Hydro has been largely ignored, either intentionally or through lack of knowledge. The physical joining of several systems can be easy, but most municipalities have differing rate structures," he said. "We are asking that some consideration be given beforehand to the problems of amalgamating these Hydro systems."

Among those opposing the resolution was Dr. J. D. Fleming, Dundas. "It seems to me," he said, "that we might be better advised to initiate such studies on our own behalf."

Earlier, D. A. Ramsay, Ontario Hydro's director of sales, outlined details of the new electrical modernization program.

"Home modernization is not a new activity," he told the 130 delegates. "People like to change with the times but they usually require a push from somebody. The EM plan will provide that push."

Mr. Ramsay said utility management would have to show enthusiasm for the plan and supply the leadership to make it work. Contractors would have to charge fair rates and provide quality workmanship and materials.

'We believe that bonding of the installing contractor is both practical and possible," he said.

J. O. Dean, Ontario Hydro's assistant treasurer, said that the success of the finance plan associated with the modernization scheme would depend to a large extent on the utility manager. It will be his function to work with the contractor and customer in approving credit and in following up late payments.

Hydro's advertising manager, C. W. Palmateer, said that the plan would be advertised in more than 250 newspapers, 59 radio stations and 17 television stations across the province. An introductory phase of the advertising program was already under way.

meeting the pea

OMEA delegates hear George E. Gathercole on mee record power requirements

Ontario Hydro met a record 8,565,465-ki load last December 19, Hydro Chairman Geo Gathercole told delegates to District 4 Ontario Municipal Electric Association's meeting in Toronto. The increase over the p a year ago was nearly 34 million kilow largest in Hydro's history. On a percentage it was the largest yearly increase since Mr. Gathercole said.

Commending Hydro's staff, Mr. Gathercole "On the peak day, every available machine generating unit upon which we had counte in operation,"

Delayed in-service dates of some major it equipment had posed a number of difficult the Commission. The Hydro Chairman cited lems associated with pioneering prototype ment and the consequent delays in bringing service conditions the Douglas Point I Power station, the fifth unit at Lakeview a extra-high-voltage transmission line linking ern hydro-electric stations to the south.

On the other hand, running very mi Hydro's favor was the weather. Mr. Gatl said temperatures were moderate and a modating, reducing the demand for power the critical peak period, and there had abundant rainfall.

The level of Lake Erie in the last two mo 1966 rose by nine and a half inches, one most rapid increases for that time of ' Ontario's history. Lake Ontario rose by ie helm for the next year are these District 4 A officers: front, D. H. Glass, Aurora, first president; A. K. Meen, North York, president; re Archdekin, Brampton, second vice-president; rio Hydro Chairman George E. Gathercole, rary president. Back: W. E. Wright, Toronto nship; J. P. MacBeth, Etobicoke; E. D. Steer, ; J. T. Armstrong, Georgetown, past president; . Damp, Toronto, secretary-treasurer.

Distinguished service is recognized for seven former presidents of District 4 OMEA. Front row: A. H. Waites, Mimico; Bertram Merson, Toronto; Dr. V. S. Wilson, Etobicoke. Back: J. T. Armstrong, Georgetown; W. J. Fisher, New Toronto; John McMechan, Toronto; and W. E. Wright, Toronto





s. The levels of both lakes were above the end average of the last ten years and approxi-I the century-old average. As a result of high evels and full stream flow conditions, Ontario provided for an energy output and contion in 1966 which was 10% higher than of the year preceding, on about the same

Gathercole anticipated some of the highlights 967, "At a time when we are celebrating da's Centenary," he said, "I am able to assure hat it will also be an outstanding year for development - one million kilowatts of onal capacity is scheduled to come into tion in this year alone."

is address, OMEA president Dr. J. E. Wilson ed the importance of sales promotion.

e use of an ever-increasing number of att-hours is essential if retail sales are to be t their present levels," he said. "Hydro needs nen today. It needs them in every municipality in the province and these salesmen should include every OMEA member.

Bringing greetings from the Association of Municipal Electrical Utilities, president E. F. Burbank said that a data processing workshop recently held in London had been the first of its kind in Canada. It was attended by 41 major utilities and had a very favorable reception.

Mr. Burbank told delegates: "Our family relationship has never been better. Every one of us in the utility field has a responsibility to carry out his job well, to plan for the future and to give the best service possible to the citizens of this province.'

Outlining the steps to be taken before launching a community relations program, M. E. Bradden, of Hydro's Public Relations Division, said the provision of good electrical service in any municipality was not enough.

"Our very existence in the municipality in which we operate has an impact on the lives of all who live in it far beyond the area of the specific service we render," he said.

"Therefore, in our day-to-day utility operations we must combine good service with a program of information, education, and personal identification with our local public - this is community relations."

Mr. Bradden said the development of a community relations program was easy, the hard part lay in the initial planning.

Delegates passed a resolution from Brampton Hydro requesting the OMEA to seek an amendment to the Ontario Municipal Act to enable commissioners to be insured against injury or loss of life while on commission business within or outside the municipalities' boundaries.

The meeting elected Arthur K. Meen, Q.C., as president. Mr. Meen graduated from the University of Toronto in electrical engineering in 1946 and he graduated from Osgoode Hall in 1949. He was honored last year by being made a Queen's Council.

strict 4 omea sured of hydro atus quo

ipal Affairs Minister Wilfrid Spooner can reason for introducing legislation which result in the duties of local Hydro commiss being taken over by committees of council, t 4 OMEA delegates learned at their annual ig in Toronto.

rict president Jack Armstrong, of Georgesaid the OMEA had written to Mr. Spooner sing concern over recommendations by of the special commissioners conducting overnment reviews in Ontario. Mr. Spooner's

reply said in part: "I wish to assure you that the recommendations on this question have in every case been made by completely independent commissioners and must necessarily refer only to the review areas which have been set out in their terms of reference.

"In fact, they represent only the personal view of the author or authors of the reports and, although their recommendations will be duly considered by my Cabinet colleagues and myself with relation to the needs of the particular area under review, I can see no reason for recommending to the government any change in the sections of the present Public Utilities Act dealing with this subject.'

Later in the meeting, president-elect A. K. Meen, Q.C., of North York, said that the OMEA Legislation Committee, of which he is chairman, had submitted a brief during last year's regional review

of Halton and Peel counties by T. J. Plunkett. The brief, in effect, urged that the local Hydro commissions be left as separate entities and Mr. Meen advised that the Plunkett report had recommended the retention of public utilities commissions. However, in the interval between the submission of the brief and the report appearing, a similar report on the Niagara Region had urged their abolition, and so it was for this reason that the assurance was sought and obtained from the Minister of Municipal Affairs.

Mr. Meen advised that his committee has prepared a basic form of brief for submission to future study commissions and said: "We have to be continually on the watch. Other commissions are being appointed and there will be many opportunities in the future for them to make recommendations unfavorable to the public utilities."

life without kilowatts

Electricity Powers Progress is this year's theme of National Electrical Week. Its significance is brought home by this glimpse of Ontario about the time of Confederation

Bonfires flicker across the night and the staccato crackle of fireworks is punctuated by the prolonged oohs and aahs of the crowd. Soldiers, immaculate in uniforms of red and green, perform their military minuets and amid the general hubbub horses rear and whinny.

The place is Toronto, the time July 1, 1867.

Confederation is a fact, Upper Canada has become Ontario and its capital is a bubbling, energetic city of church spires, trees and wooden slums supporting a wild cross-section of humanity amounting to 50,000 souls.

Lieutenant-Governor Henry Stistead more than likely set off for the first meeting of the Ontario legislature later that year with his shirt pressed with a flat iron and a speech studied by the light of a kerosene lamp, for at this time electricity was no more than an interesting laboratory phenomenon.

How else did life in the provincial capital differ in the latter part of the nineteenth century? Well quinine, morphine and opium were available in quantities limited only by the purchaser's purse while the city's 180 taverns foamed with activity. It was commonplace for boys not yet in their teens to be found lying drunk in the streets, for parents to send their youngest daughters out to beg.

For the "upper class", life was sweeter. The social whirl revolved around the garrison, yacht races across the harbor, Saturday cricket and Sunday church bells. At the Royal Lyceum, the Holman Opera Company was presenting a repertoire from "Aladdin" to "Il Trovatore".

It sounds like another world. Yet there are people alive today who were born in 1867 and many a spritely octogenarian can recall what his father told him about "the good old days". But this has been a century without parallel. In it, science has wrought such an incredible transformation as to make that bewhiskered, frock-coated Canada-in-the-making completely alien to modern minds.

Just look at a few of the century's innovations. There's the automobile and the airplane, both of which have revolutionized transportation, there's the telephone, radio and television, which have revolutionized communications, and there's the atom, which may yet revolutionize practically everything.

Sixty short years have seen the introduction of a host of labor-saving devices and the development of the electric power without which these devices would be so much scrap. Deprived of this same source of energy, modern industry and, perhaps, our entire civilization would dissolve into anarchy and confusion.

Doubtless the date 1867 will be indelibly stamped on the minds of 20 million Canadians before this





- 1. Arcade on Yonge Street, Toronto, was built in 1883 and rebuilt after a fire a few years ago. Arc lamps are suspended from the roof. Other illumination was probably by manufactured gas. (Toronto Public Libraries photo)
- 2. Toronto Transit in good old days. Two-horse car travelled from Union Station to North Toronto. First electric streetcar appeared in the city in 1883.
- 3. Kingston looked like this around 1840. Drawing is by W. H. Bartlett as published in Willis's Canadian Scenery. Visible at left is Fort Henry, still a tourist attraction.
- 4. John Barber built a tiny hydro-electric plant on the Credit River in 1888 to serve these paper mills he owned in Georgetown. It was probably the world's first instance of practical power transmission. The distance involved was about two miles.

nnial year is done. However, a kaleidoscopic of Ontario life around the time of Confednand before electricity seems appropriate. time when Napoleon III was emperor of the Bismarck was busy unifying Germany and Tom Edison was working as an unknown enniless telegraph operator, there was little province north of Muskoka save rocks, lakes ees.

ge Street ran 35 tavern-dotted miles from the o waterfront to Holland Landing while the Trunk railroad sliced through the capital city way from Montreal to Sarnia and Chicago. I that could boast a bathtub were few and far an, street cars were drawn by teams of horses ere was no snow removal as we know it.

es were low, clothes and books relatively sive. A copy of "Priest and Parish" by nd Harry Jones sold for \$1.75 while "An of Diseases and their Treatment" fetched a eserved \$3.00. A one-way ticket from New England would see you \$50 the poorer.

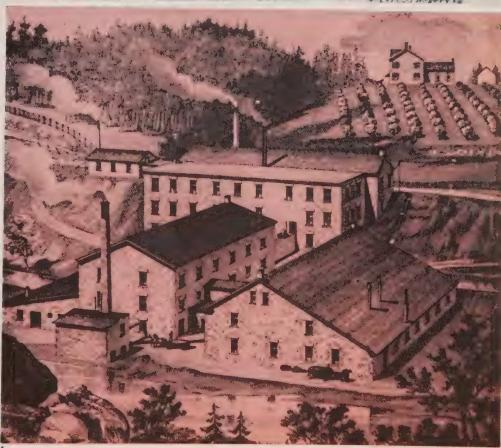
e January of 1867 there was an ice bridge ng 12 miles from Kingston to Cape Vincent, Inited States, and local newspapers reported coaches plying regularly across the frigid of St. Lawrence ice. Hotter news was from Europe to the inhabitants of this chilly the latest wonder of the age, the transtelegraphic cable.

vorld's idea of a typical Canadian was perin the river songs and barroom brawls of berjack, who gave the nation a color of its Vood, indeed, was a major export from a Port Hope, which in 1866 shipped nearly on feet of lumber to the American market Seven hundred schooners and more than amers dropped anchor at the port that year. eople had burned so many logs trying to arm that coal began to gain the upper hand. imported more than 40,000 tons from the States the year before Confederation and is advertised at "half the price of wood". d is becoming so scarce not only in the rhood of Toronto but at most accessible along the shore of Lake Ontario that it is command a higher price in future," be-

water power and the recently introduced g steam engine were the only sources of or the industry of the day. Every accessible d its woolen, saw and grist mills, their g machinery driven directly by the force of g streams with tongue-twisting names. The the greatest river of them all, the ng Niagara, continued its precipitous jour-

the Daily Globe.





- You won't recognize this section of Toronto's St. Lawrence Market. Photo was taken in 1887 in an era of gaslights, horsepower and the new-fangled telephone. While building shown has since burned, marketplace's St. Lawrence Hall is being restored for Centennial.
- Around the time of Confederation every accessible river had its woolen, saw and grist mill driven directly by the force of falling water. This woolen mill is at Bancroft, Ontario.

ney towards the sea, a tantalizing prospect for men of vision. Primitive mills were operating along its banks at the time of French rule while as early as 1853 a diversion canal was excavated on the American side to feed water to mill machinery. Not until 1881, however, did the Niagara Falls Hydraulic Power and Manufacturing Co. use water power to produce the first supply of electric current for commercial use in the Niagara area.

The generation of electricity from the energy of falling water is, for the most part, a 20th century development, even though the crucial inventions and discoveries — the hydraulic turbine, the dynamo, the alternator and the central power station — were all made before 1900.

Oil was the principal means of illumination around Confederation and with discoveries that were blackening the countryside around Petrolia and Oil Springs, the province became the focal point of a new North American industry.

Perhaps the most lucrative well was the one struck by Captain King, of St. Catharines, yielding 265 barrels a day. Land speculation ran rife in this razamataz, booming corner of the new province and one hapless individual is said to have turned down \$400,000 for a mere 200 acres.

Gas was being manufactured from coal around the middle of the century and was quickly used to light streets and then homes. Yet in spite of the invention of the gas mantle in 1885, electricity would soon replace coal gas as an illuminant.

Arc lamps made their appearance in Victoria, BC, as early as 1876 while five years later John Joseph Wright established a steam-driven power plant to serve 15 stores in Toronto.

It was 20 years after Confederation that Orillia became the first municipality in Ontario to operate its own generating station—steam-driven, of course—and 1906 before the general concept of public power received official sanction with the formation of Ontario Hydro.

Once the principles of hydro-electric generation were put into practice, Ontario's rivers would supply all the province's electric power needs for decades to come. When these were harnessed the emphasis swung back to coal while looming on the horizon was a name that future generations would link with a spectacular new source of electric energy — Elliot Lake.

Nuclear-electric power is indeed a lengthy step from the water wheels and steam engines of 1867. This month sees the observance of National Electrical Week, the theme of which is "Electricity Powers Progress". Without electricity, the progress of Canada's first 100 years would have been impossible.







ent of the Hydro year

n as far away as Sioux Lookout in Northwestern Ontario some O delegates will converge on Toronto's Royal York Hotel for 58th joint annual meeting of the Ontario Municipal Electric ciation and the Association of Municipal Electrical Utilities, uary 26 to March 1. One of the highlights this year will be the iling of the OMEA-AMEU - Ontario Hydro Centennial ect — the Hydro Hall of Memory — at Ontario Hydro's Sir m Beck No. 1 generating station at Niagara Falls.

mer Hydro director dies



Morris J. McHenry, former director of Ontario Hydro's Consumer Service Division and a man highly respected among the municipalities, has died at the age of 78.

Mr. McHenry graduated with honors from McGill University in 1910, winning the Advancement of Science medal. During his early career he held several engineering and sales positions including a job with the old Toronto Power Company. He was manager

alkerville Hydro from 1918 to 1924. Walkerville was later

rbed by the City of Windsor.

1938, Mr. McHenry left Canadian General Electric to head rio Hydro's new sales promotion department. He was director onsumer service from 1947 to 1953 and stayed on in the city of consultant until his retirement in 1957

McHenry's sons Gordon and Bruce both work for Ontario o. Gordon is manager of Western Region and Bruce is a irch engineer.

ic Night in Toronto

good things get to become traditional and that's what is ening at Toronto Hydro's Civic Night dinner. This is the Ing when Hydro is host to council and top civic officials with bjective of fostering co-operation and understanding in an mal atmosphere.

ric Night this year had a Centennial flavor. In his address, nto Hydro Chairman John McMechan harked all the way to 1867 at which time, he said, electricity was beginning to ge as a practical form of energy. "The beginnings were nt," he pointed out, "in the success of telegraphy and in the hat electricity had left the scientific laboratory and entered ventor's shop. So rapid was the development of the practical cation of electricity that within a dozen years after Confederain 1879, we find the first arc light in Toronto.'

McMechan also revealed some startling growth figures for

his utility. He said the assets of Toronto Hydro had grown from just over \$10,000,000 in 1917 to nearly \$100,000,000 at the present time, in addition to another \$100,000,000 in the Ontario Hydro sinking fund. During the same period, outstanding debenture debt had grown only from \$7,250,000 to an estimated \$9,000,000.

"But it is not only on the basis of dollars and cents that an organization such as Toronto Hydro should be judged," he said "It also should be judged by the part it has taken in the development of the city it serves; by the regard it has paid to the sensibilities of its many neighbors who live close to its substations and other buildings; by the amount of good, unbiased advice it has given to its customers in helping them in their day-to-day problems in industry, commerce or the home; and in the general attitude of the organization as a whole to the problems of the average citizen.

"It would be boastful of me to say that we have scored 100 per cent in every case but from the remarks of our customers, from contacts with the people and from our good reputation in the community, which we guard assiduously, it would seem that we have indeed gone a long way in satisfying the requirements of good citizenship."

Turning to the future, Mr. McMechan had this to say: "I see a city of commerce and industry wherein the push-buttons controlled by electricity eliminate the drudgery of labor and the



She's in control of the situation.

boredom of routine is taken over by electronic machines. I see a city where the atmosphere has been cleansed by the elimination of fuel-burning transports, and each building has a climatecontrol system without benefit of smokestack. I see a city whose total requirements are met by electricity supplied from nuclear stations such as now can be seen rising on the shores of Lake Ontario just east of Toronto at Pickering. I can see a city which is productive, healthy, interesting, gay and a place where people want to live, but a city also that is not forgetful of its heritage.

Mayor William Dennison called electricity one of man's greatest achievements with a future to stagger the imagination. He cited the heating of huge buildings without fuel by means of electricallyoperated heat exchange systems as indicative of things to come.

F. G. Gardiner, vice-chairman of Toronto Hydro, said he had never been known as an advocate of public enterprise "but you can put me down as in favor of public ownership insofar as the generation and distribution of electricity is concerned." He said the Toronto commission was free of politics and management was tops.

Shown in the photograph chatting during Civic Night, from left, are: Controller Margaret Campbell; Adam Smith, manager of Ontario Hydro's Central Region; F. G. Gardiner, vice-chairman of Toronto Hydro; Mayor William Dennison and John McMechan, chairman.

Cost of power briefs



The committee is all ears.

Fourteen municipal electrical utilities scattered from Cochrane to Etobicoke and from Sarnia to Nepean Township met in Toronto recently to submit briefs on the contentious subject of power costing procedures. They were heard by the Power Costing Committee of the Ontario Municipal Electric Association, augmented by representatives of the Association of Municipal Electrical Utilities and Ontario Hydro.

The hearings were initiated as a result of a resolution endorsed at the last annual meeting of the OMEA calling for an investigation of the consequences of the new power costing procedures introduced, January 1, 1966, by Ontario Hydro with the approval of the municipal utilities. These procedures govern the wholesale rates paid by the municipalities for power. The resolution also asked the Power Costing Committee to reconsider the method of allocating the costs of frequency standardization carried out in Southwestern Ontario in 1949–1959, and to hear representations from utilities wishing to submit briefs.

In setting the tenor of the hearings, Committee Chairman Dr. R. H. Hay, Kingston, said the primary aim was to gather information. "We should behave as nearly as possible as does a select committee of the Legislative Assembly," he said, "or as one of the recent commissions on local government. The questions we ask of those who make the presentations should be to elucidate points which are obscure or to provide additional information to the committee to aid it when it comes to prepare its final report."

While many factors involved in the equitable costing of electric power were discussed in the briefs presented during the two-day sessions, the most contentious and recurring points included the desirability of changes in the allocation of charges for the unpaid portion of frequency standardization costs; problems arising from the creation of a single "power district" representing all of Ontario Hydro's direct customers exclusive of the municipalities; handling of the returns on municipal equity in the Hydro system; and the need to assist utilities in anticipating rate changes to facilitate planning.

Dr. Hay said the committee would hold another meeting soon. He had high hopes that its members would find "common ground" on most of the issues prior to the joint OMEA-AMEU annual convention, February 26 – March 1. "We will make every effort," he said, "to have a full report with recommendations ready for the consideration of the delegates."

Provincial leagues meet

Electric leagues from Quebec, Ontario and Manitoba met in Winnipeg last month to review policies and objectives. Chief item on the agenda was the question of financial support.

League officials agreed that they wanted the active participation of all industry members on the provincial level. Because of differ-

ences in the organization of various industry groups in a province, there would have to be variations in fee structures they thought these should not hinder the pursuit of compolicies and objectives in such areas as co-ordination of indepromotions, standards and symbols.

Youngster doing well

Electric heating gets a glowing report in the January issumed Reader's Digest. Already it has been installed in three magazine, and the Federal Power Commission predicts that by 1980 about million homes will have it.

The article says that until recently electric heating in the U States had been prohibitively expensive. But research in he and insulation together with cuts in power rates had altered situation.

In Canada, the report says, the number of electrically he homes has soared from about nil five years ago to more 50,000, mostly in Ontario, Quebec, BC and Manitoba. By there'll be an estimated 120,000.

As the writer says: "It has long seemed clear that the sim way for the householder to get heat is to flick a switch and le power company do the fuel-burning."

Fuel processing

Some 150 delegates attended a February 1 international ference in Toronto on the processing, reprocessing and mar ment aspects of nuclear fuels. The Niagara-Finger Lakes Se of the American Nuclear Society and the uranium committee Canadian Nuclear Association were co-sponsors of conference.

Room at the top

Paralleling the rags to riches fable but in a different sort of Kenneth C. Pearson, one of two newly elected commission Niagara Falls, can be said to have moved up top from inside. 1921 until the Friday before nomination day, Mr. Pearson w employee of Niagara Falls Hydro. He started as a lineman, served as an operator, meterman, collector, heater service records clerk, and foreman until 1949 when he was named



The changing scene at Niagara Falls.

superintendent. From April of last year until his early retire he served as special assistant to the utility's engineer. Mr. Pe left, back row, is standing with Michael J. Repa, the othe member of the commission. Seated are commissioners. Wincott; George Burley, chairman; and Mayor Franklin Mill

Half century of service

More than 50 years of service was honored when Preston I Utilities Commissioners paid tribute to retiring members \ Denyes and Oliver Little. In addressing the veteran commiss



town is indeed proud of you both."

luncheon in their honor, Mayor Harry Halberstadt said their bined service to the town was a symbol of dedication. Dur town is indeed proud of you both," he said, "and you played an important role in the progress of one of its most protection, that of supplying hydro and water."

Then yes left, and Mr. Little right, were proceeded with radical

r. Denyes, left, and Mr. Little, right, were presented with radios pipe-shaped vases of flowers by PUC Chairman George k. The two staunch pipe smokers each served 26 years as missioners.

nunicipal briefs

e than 150 prominent Hydro and waterworks people attended ner meeting to honor Ronald Harrison, manager of Scarugh PUC, who retired, February 1, after 46 years in the public y field. Mayor A. M. Campbell gave the keynote address and r speakers included Adam Smith, Ontario Hydro's Central on manager; Dr. A. E. Berry, former chairman of the Ontario Processources Commission; C. Proctor, formerly manager of h York Hydro; E. F. Burbank, president of the AMEU; G. R. s, manager of Kingston PUC; and M. Walker Broley, chair-of Scarborough PUC.

neth Dunn has been appointed manager of Elmira PUC. He eeds C. C. Rachar who retires shortly. Prior to his PUC pintment, Mr. Dunn was a foreman with Ontario Hydro at

with the system since 1945 and manager since 1950. Dent's resignation takes effect June 30, but he will stay on in dvisory capacity, assisting the new manager.

year-end report, Don Noxel, sales promotion manager, told Port Colborne Hydro Commission that 20 per cent of the new es built in the city during 1966 were electrically heated. In tion, some 112 water heaters and 27 new clothes dryers were led as a result of promoting these items. During 1967, the y will stage three open houses to sell the idea of electric heat. In the commission commended Mr. Noxel for his accomplishing the past nine months and said it was looking ard to a very successful sales year in 1967.

the same meeting, Ernest H. Barrick was re-elected chairman ort Colborne Hydro for the 14th consecutive year.

See Cameron, whose retirement as manager of New Toronto was announced earlier in this column, is staying on in the Toronto office for a short time until full integration with icoke Hydro has been completed. He served for 28 years with New Toronto utility and was among the community's most c-spirited citizens. His interests include church work,

Canadian Legion, the Boy Scouts, conservation and politics. He was presented with a gold watch and ring by commissioners and employees at a recent PUC dinner.

St. Mary's PUC is making the most of its history prepared for the "Hall of Memory" at Niagara Falls. H. E. Dickinson, PUC manager, prepared a condensed version in booklet form for mailing to customers.

Body heat from 1,000 students and from the lighting system will help warm a windowless, \$3,500,000 school due to open in Dresden in September. The Lambton-Kent Secondary School will be among half a dozen or so schools in the province employing the electrical heat pump principle of temperature control.

Port Credit PUC soon put an end to a wave of vandalism at the Trinity Anglican Church cemetery on Stavebank Road. They illuminated the entire area with floodlights. Church officials and the town council have expressed gratitude to the local utility for their effective action.

Former manager of Campbellford PUC, R. James McMullen, died recently at the age of 66. Following a 46-year career with the commission, Mr. McMullen retired last June. He started as a line foreman.

Would you believe Port Credit is expanding to the south? In one of the dampest annexations yet to flow across the lake of Ontario municipal history the town received approval from the Ontario Municipal Board to annex an area extending one mile into Lake Ontario along the town's entire waterfront.

Reason for the March 1 move is to give Port Credit jurisdiction over docks and waterfront activities. At present, the board says, the town's marine patrol officer and police are not empowered to enforce the law on the water.

Kenora Hydro came one step closer to reality with the election of a commission and the appointment of a chairman. Roy F. Stratton, a former councillor, was appointed chairman while Mayor E. L. Carter and W. D. Leydier were named commissioners. It is expected that Kenora Hydro will become a cost contract municipal customer within the next few months when work on transformer and feeder facilities is completed to allow it to take power from Ontario Hydro at 115,000 volts. The town has been purchasing power from a pulp and paper company since 1921.

Every second bill issued by the Borough of North York Hydro is now estimated. Enclosed with the first estimated bill was this notice: "This method of billing should not inconvenience you and it will help us to maintain our present electric rates in the face of increased operating costs. Any difference between the estimated and actual use will be adjusted on your next bill."

Electric heating to boot



There was an old lady who lived in a shoe.

Port Colborne Hydro was a shoo-in for top prize as the best commercial float in the local Christmas parade. A take-off on the

eccentric old lady of nursery rhyme fame who lived in a shoe, the float bore this message:

"There was an old woman who lived in a shoe,

Twas electrically heated thru and thru,

Her children were happy, their comfort complete,

In safety they slept with electric heat."

Applause was generous for this unique method of promoting electric heating.

Nepean on the move

Nepean Hydro, one of the latest to join the Hydro family of municipalities, moved last month to a fine new office and service building nearby the crowded rented quarters it has occupied for the last few years.

Three of the commissioners appointed at the formation of the utility in 1964 were recently returned to office in their first election. Township Reeve D. A. Moodie continues to serve along with H. Hargreaves, F. R. Cross and J. Cotterill. A. Tingley is new.

Nepean Hydro serves 13,000 customers and last year bought nearly \$1.5 million worth of power.

Total-electric urban renewal

Downtown Halifax, Nova Scotia, will soon boast what may be the largest, all-electric development of its kind in Canada.

To be known as Scotia Square, the urban-renewal project will have an enclosed, two-level, air-conditioned shopping mall with two department stores, up to 50 specialty shops, a theatre, supermarket, trade mart, and a 17-storey, 300-room hotel with an electronically controlled, all-weather swimming pool. Three 444-unit apartment buildings will complete the project. It is to be finished in four years.

Atoms and donkeys



Man and beast still the most efficient

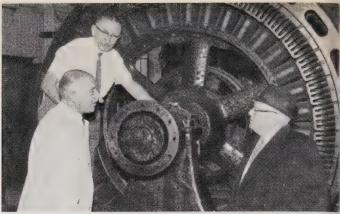
Pakistan's first nuclear power station is beginning to take form on the coast of the Arabian Sea. The station is being built by Canadian General Electric's Atomic Power Department on a contract valued at \$60 million.

Strange as it may seem, all the excavating for what is considered to be one of the world's most sophisticated nuclear plants is being carried out by men and donkeys. It has proved to be the most efficient way. The walls of the excavations are standing up so well that no outside forms will be used in pouring foundations.

The plant is scheduled for commercial operation by mid-1970, 55 months from the CGE-Pakistan contract signing.

Generator joins collection

Fourteen tons of generating capacity has become part of Ontario Hydro's historical collection. The generator, installed at the Watson Manufacturing Company at Brantford in 1904, proved its durability right to the end. The day before it was moved from



Over 60 and still going strong.

Brantford to storage at the Toronto Power G.S. at Niagara Harvey Moore, superintendent of the garment manufact plant, Norman Grandfield, Brantford PUC general manager Norman Lake, retired Hydro survey engineer, ran it up and it in working order. The Watson company donated the old-to the collection, despite its \$2,000 scrap value.

Old Glory flies high

Creaking in the joints and somewhat the worse for wea Fonthill area's oldest citizen will be around to celebrate Car Centennial, July 1. Estimated to be 450 years old, the maple had already celebrated its first century when Chan came to Canada in 1603.

A ward of the Niagara Peninsula Conservation Authority Glory now measures 18 feet five inches in circumference at height, is 90 feet tall and has a crown diameter of 70 feet surgeons have been pampering it over the years. Its branches been braced, its cavities sealed and its roots fertilized. A sy of longevity, it stands guard amidst the pear and cherry orc that surround it.

Aubrey Falls in gear

Preparatory work on the \$26 million generating station at A Falls on the Mississagi River, about 70 miles north of Thes is moving ahead rapidly. Ontario Hydro has made two purchases which will facilitate early work on the 130 kilowatt plant.

A 70-ton mobile crane, the largest of this sort Hydro has purchased, will be on the site shortly. Mounted on a truck of the crane has a reach of 200 feet. A smaller mobile crane crawler crane will be used later.

To house single workmen at the construction site a con trailer camp complex has been bought and will be set up the next few months. This marks the first time Hydro has accan entire mobile camp, which can be moved to various contion sites around the province.

December energy production

Primary energy provided by Ontario Hydro in December totalled 4.63 billion kilowatt-hours, an increase of 11 per cent over the same month a year ago.

For the 12 months of 1966, the total is 48.06 billi kilowatt-hours, up 10.3 per cent over the same perilast year.

Adjusted for seasonal influences, primary energy dema in December was 4.24 billion kilowatt-hours, 1.8 per cemore than the previous month.

The seasonally adjusted total for December represer 50.83 billion kilowatt-hours at annual rates. This is 365. per cent of the energy demand in 1949.

off the wires

sed as we are on the threshold of our Cennial year, deep thoughts seem appropriate and nay be the right time to plumb the depth of our ionalism, to determine just what it does mean be a Canadian and to strip the husks of curity from the golden kernels of our heritage. In second thought, though, it may be a little for a husking bee of this sort. What with the mper crop of Centennial corn being sown on sides, we might be better advised to stick with sjects upon which we do have a smattering of owledge. Like electricity, for instance, or sex, poth.

Back into our rut, then, and we'll have a look at ne of the more unusual applications of elecity which have come to our attention of late, the past we have reported developments ging from all-electric go-go girls to highwered toilets and we have been able to tell v judicious jolts of juice have been used to e the gambling habit and to wean the overlous from the grape and the barley. Now, two ish psychiatrists are enforcing the 10th mandment electrically.

hey gave these details in a medical magazine: patient, married 10 years, began coveting his ghbor's wife. His own spouse eventually forte him, or so they report, but he became pressed and remorseful upon being denied ess to the apple of his eye. With both women being to help in the therapy, he submitted to ck treatment.

ictures of his wife and the "other woman" re flashed alternately on a screen. Every time photo of his paramour was projected, the ent received 70 volts of the best stuff turned by the Central Electricity Generating Board, onclude the psychiatrists: "He is now totally fferent to the other woman."

Il well and good but we wonder how indifferhe is to his own little woman and the two tors. He'll likely do his Christmas shopping y. Three electric chairs, please, — two big one small.

cycles, sermons and celibacy have all been ked from time to time and from country to ntry in an effort to cut down on the blossom-population but, in our opinion, the Egyptian renment is going too far in its plans for adcasting "anti-love songs".

ranted, the problem is critical if we can believe, Cairo newspaper Al Akhbar, which recently ke in scathing terms of "villages that produce dren like rabbits" because "the fact that there o electric light and the lack of entertainment ges the peasant to go home early".

mong the measures adopted to speed accepted the nation's family planning program are new anti-love songs. One particularly haunt-lyric echoes the rabbit simile. It goes like this: u have beaten the rabbit in having so many dren,

on your brakes so that you don't have trouble bur family.

will be more troublesome for you who have en the rabbit.

You have made your husband in debt morning and evening,

You, mother of boys and girls, have created a school class in your house."

Not too swinging, perhaps, in English, but in Arabic, they say, it's a real rouser. Doing what comes naturally is definitely out and for a theme song we would suggest: Never on Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday — but any other day.

Frankly, though, we can't see how a few bars of the rabbit song are going to effect any great change in the recreational habits of the Egyptians. And to blame the lack of electric lights for the boom in babies is enough to bring a broad grin to the inscrutable face of the sphinx.

Just across the blue Mediterranean from the land of the Nile, it's somehow reassuring to find the Italians still getting into trouble over the proverbial wine, women and song. One amorous youth, in an attempt to kiss a young lady on a deserted street recently, broke from the embrace minus a good part of his tongue. The surgeons who sewed Romeo together again are still wondering whether the girl was angry or hungry.

And the death toll from wine making appears to be on the rise. Three persons were rendered permanently hors de combat by the fumes from a single batch in northwestern Italy. The firemen who carried them out had to wear masks.

Now the sturdy folk who dwell on the rockbound island of Newfoundland have long been renowned for the potency of their homebrew but even Newfie Screech has to be drunk to be lethal. In Italy, it's one whiff and you're stiff,

Lack of reports to the contrary suggests that the Italians have been behaving themselves where song is concerned of late although we'll bet they still rip off a ribald stanza or two. In Rome, the constabulary is taking measures against foreigners who might be tempted to pollute the local atmosphere with ungentlemanly language. Police have been issued with manuals listing insults and profanity in English, French, Spanish and German.

Tourists hurling choice epithets at traffic cops will have to move quickly now before the law figures out whether or not it's been insulted.

Closer to home, it's hats off to the sly fellow from Massachusetts who has developed a new stock market theory and a perfect excuse for feasting his eyes on female pulchritude with impunity. His theory: the stock market fluctuates with the rise and fall of the ladies' hemlines. He notes that skirts and stock prices were high during the prosperous times just before the 1929 crash, during World War II, and in recent years. Hemlines were lowest in the depth of the depression and during the postwar recessions of the late forties and early fifties. His advice — start selling the minute hemlines start falling.

Some will contend that his theory was torpedoed last year when stock prices fell while skirts stayed up. Personally, we're not convinced one way or another and will continue to keep a close eye on this new and fascinating economic barometer.

Speaking of hemlines, a New York boutique has come out with a little number which could make us forget all about them. It's an electric dress. According to the report we have, it was created by Diana Dew, a 23-year-old designer of "ferocious talent" and it "flashes on and off in colored light patterns, a number seven and a palpitating red heart".

The dress operates with the use of wires, light bulbs and batteries concealed in, on, under, between or amid the lady's raiment. It's not the sort of thing one should dwell on, we suppose, but it's hard to help theorizing on the location of all this equipment.

So now, in addition to the usual hazards inherent in the female costume such as high heels, flimsy straps and sheer hose, comes the possibility of overloaded circuits, bare wires and blown fuses. On the bright side, it will mean more work for electricians of the kind they can be expected to approach with some enthusiasm. Fancy searching out the faults in a young lady's circuit with double pay for overtime.

■ We are proud to announce that the prestigious "Home of the Year" award, offered by Off-the-Wires to the designer of the detached dwelling selected by a distinguished panel of judges as best exemplifying Canadian architectural progress, has been retained again by Ontario in 1967.



Home of the Year

Shown here, the winning entry features a lived-in look of casual elegance which seems to have captured the spirit of a fast-developing nation still heedful of its pioneering past.

The judges were particularly impressed by the extensive use of made-in-Canada materials throughout the structure. Other point-winning features included the natural wood exterior, the inconspicuous TV antenna and the judicious employment of "pop art" in the landscaping and garden fixtures. The home was, of course, all-electric including the heating system.

Home of the Year for 1967 is located in a new subdivision in the City of Stratford.

The award, a set of electric door chimes tuned to play the first three notes of Kan-nah-dah, will be presented in ceremonies scheduled to coincide with the opening of the Stratford Festival.

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The Old Way

Why should delicate, refined women slave at the wash board over a steaming slopp tub or crank eternally at the wringer. Hasn't Father quit cranking the car?

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ontario hydro news

march/1967

·ads from another era

·we skipped the second generation

·caution: human factors at work



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the cover

The bonds binding the "delicate, refined woman" on our cover have long since been severed by electricity. This particular ad was run by Woodstock PUC in May, 1920. Others of like vintage, shown on pages 12 and 13, suggest that sales promotion and the electrical utilities were no strangers half a century ago.

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Powerful memories — Among the proliferation of Centennial projects being unveiled across the country as Canada draws near its 100th birthday few are more meaningful than the one contained within these doors. It is the story of public power in Ontario and it's told with all the tools of modern graphic arts, augmented by authentic and significant electrical artifacts.

Located at Niagara Falls in the old Sir Adam Beck-Niagara generating station, the Hydro Hall of Memory is the official, joint Centennial project the Ontario Municipal Electric Association, the Association of Municipal Electrical Utilities, and Ontario Hydro.

It was officially opened February 25, and delegates attending the 58t annual meeting of the OMEA-AMEU in Toronto were able to view the even on film three days later.

Deputizing for Premier Robarts at the opening ceremonies, Provincial Secretary Robert Welch said: "The story told here is not only an important chapter in the history of Ontario, it is an important chapter in the history of Canada as a whole."

The project will be among the features of our April issue. For more on the 58th annual meeting, please turn to page 14.

the third generation

We've leaped straight from the first . . . and computer technology is growing so fast that Hydro is leasing, not buying, its latest equipment

Like man, computers can be classified into generations. But it doesn't mean that the sixth generation has to follow the fifth or that the tenth follows the ninth. Ontario Hydro, for instance, plans to retire its first generation of computers, skip the second and jump into the third generation in the space of a few months.

The move will push Hydro into the forefront of computer technology and open the door to wider use of data processing services. In future the scope of computers seems limited only by the ingenuity of the user.

The third generation will comprise two offspring — an IBM System/360 model (for commercial work) and a Univac 1108 (for engineering and scientific calculations). Introduction of equipment from two different manufacturers is viewed as near heresy by some experts, but Hydro has never been one to tread softly in the face of convention.

Engineer Don Nevison, who headed a committee which investigated the technical aspects of computing services, says an evaluation team studied several different installations. "In our opinion," he says, "the mix of equipment will satisfy computing requirements in the most effective way."

The new equipment is being leased rather than purchased. Leasing allows advantage to be taken of continuing developments in a field which tends to change almost overnight.

Third generation computers make use of solid state circuitry, which replaces the vacuum tube

with "chips" – fingernail-size silicone wafers containing the equivalent of dozens of transistors, diodes, resistors and other electrical components. The science of micro-electronics has sharpened computer reflexes to billionths of a second. A cross-section of work that takes 140 hours on the present first generation Univac II will be polished off in an estimated five to seven hours on the new equipment.

Why is it faster? Electronic impulses move at the speed of light in all computers, but if the distance between components is reduced the tiny currents don't have to travel as far. This speeds up the overall operation. And the new equipment is much less bulky. Univac II weighs 16½ tons and occupies an area equal to a medium-sized office. Its third generation counterpart is about the size of six filing cabinets.

In itself, the equipment makes a fascinating story, but the tale is best told in terms of what it can and will be doing for many of Hydro's operations.

A new DP philosophy has emerged after extensive study. Data processing is becoming increasingly more service-oriented. As well as being a function in its own right, it will become more and more a partner of other departments in solving their problems and helping get the job done.

The computer will still continue with its bread and butter work – calculating and printing cheques for Hydro's 15,000 employees and handling the billing of some 500,000 customers served directly by Hydro. But under the new philosophy and with the new computing equipment, an open shop will exist for engineers. This will mean that an engineer can supply the data processing centre with a problem written in the computer language FORTRAN (formula translation) where it will be run on a machine specifically available for solving such problems during

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FORTRAM STATEMENT

ng hours. If the problem isn't written in RAN, central programming services are

se of the speed and capacity of the new nent, it will be capable of performing tasks simultaneously. For example, while g on the engineering problem it may be g pay cheques in spare micro-seconds.

anagement is looking more and more to mputer to help them make decisions. A labor relations problem might be the of three-week yacations being extended to ployees with five years' service. Dependent data introduced into the computer, is to such questions as the number of our's lost, increased administrative costs, in of temporary or part-time employees to cover the gap, or how much of a could be expected in specific operations, be obtained.

mputer has already found wide use in s System Planning Division, which uses it struct mathematical "models" of the power. One such model allows them to deterwhat high voltage transmission capacity is d to meet the power needs of Ontario. By do generating sites within the province be represented, but also the power out-interconnected systems in other provinces ates.

linked with forecast load demands, such help determine where and when new ting stations and transmission lines be built. At present the division is looking thead as 1972.

andeno, engineer in charge of Analytical (1g, whose group works with these sophisticower system models, says the new 1108 will do their work nearly 2½ times as (1 as the computer now being used.

Aside from the new computers speeding up presentation of the over-all power system expansion picture, they will enable System Planning Division to look at more specific, detailed aspects of the complex. And more frequent analysis will be possible.

Power station operation is another area making increasing use of DP. For a number of years analogue computers (ones that simulate components of a problem on a smaller scale) have been used in this work, but, of late, digital computers (ones which use the binary system to give actual mathematical value to components of a problem) have come into the picture.

Although computers are installed at both the Nuclear Power Demonstration station, Rolphton, and at Douglas Point nuclear station on the eastern shore of Lake Huron, neither computer plays an important part in the control systems. But at Pickering nuclear station, just east of Toronto, computers will play a vital role. Four data acquisition and control systems will be installed for operation and back-up operation of each of the two reactors and associated equipment. Pickering will begin producing power in 1970.

Yet another application of the computer is a control system for the 49,000-odd parts for each of the units at Pickering. Information on everything from concrete to conduit is being computerized. All parts will be followed from drawing board and the placing of the order until they are delivered to the site. Regular progress reports showing the status of each part will be issued in an effort to pinpoint those behind schedule. If successful, the system will be used on other Hydro projects.

Two coal-fired generating stations, Lakeview and Lambton, will also use digital computers in their operation. The system at Lambton will be more sophisticated than at Lakeview, performing such duties as optimizing control of the turbine start-up and initial loading routines.

Hydro's research section is now at work on a scheme which could eventually provide moment by moment analysis of the entire generating system. The scheme would consist of an assembly of solid-state circuits which would measure voltages and currents across the system. The information would then be digitized and stored in a computer at Richview control centre where personnel would use it to adjust the flow of electricity for optimum efficiency.

New applications are emerging in the area of finance and commerce, where computer techniques have been used for many years. For example, computer programs will be used to project costs into the years ahead to determine the financial effects of Hydro plans on customer utilities, to indicate the financial effect of alternative action and to test the adequacy of reserves for rate stabilization.

And what of the future? Well, Hydro may eventually introduce a system called remote inquiry, by which work groups will be able to use the computer from a distance.

It will work somewhat like a long-distance telephone network. The inquiry could be from as near as the Engineering Building (across the street from Head Office and Data Processing) or as far as Hydro's Northwestern Region office in Port Arthur.

This type of network will become possible with the development of a library of reusable programs. Problems which occur over and over again in different situations would be included in the library. The user would simply introduce variables into the program and get his answers back without delay.

The list of things a computer can do appears endless. And having in mind that increased efficiency will help to stabilize the cost of power, Ontario Hydro intends to stay in the forefront of computer technology.

Australia's vast Yallourn open pit brown coal operation has been worked since 1924 as part of the Latrobe Valley project. The world's largest dredgers, digging at the rate of 1,750 tons per hour, are employed. Briquettes, compressed and dried from the moist coal, make a high-grade, general purpose fuel.





oung king coal



kilowatts and kangaroos

Down under in the Australian state of Victoria they rely on vast deposits of immature brown coal to provide their basic electrical needs. An age or two older than the boggy peat used more or less successfully by some power producers in Ireland, the Australian product is still only about 20 to 25 million years old — a mere upstart as the age of coal is reckoned.

Immature or not, the brown coal of Australia has been helping the State Electricity Commission meet its power requirements since 1920 and at the present time accounts for 75 per cent of power production. Located in the Latrobe Valley, about 90 miles east of Melbourne, the deposits supply three nearby base-load generating stations which have a combined capacity of almost 1,400,000 kilowatts.

More than 21 million tons of the stuff were extracted last year from three open pits. The amount mined has doubled in 10 years, matching the increase in Victoria's demands for power. The largest cut covers two-and-a-half square miles and has yielded over 300 million tons of coal so far.

The Latrobe coal-fired stations are ultimately expected to supply 90 per cent of the state's electrical requirements. One of them is being expanded from its present capacity of 600,000 kilowatts to 1,600,000 kilowatts and coal production will be raised to 32 million tons annually by 1971.

Yet there is little danger of depletion. Reserves capable of being extracted by the huge, electrically-operated dredgers employed are estimated at 17,500 million tons. The coal belt is almost continuous for 40 miles and for much of that distance is five to 10 miles wide. One field explored revealed 759 feet of brown coal under 89 feet of overburden—the greatest continuous thickness of coal yet discovered.

Australia's brown coal had its origin in the accumulation and partial decomposition of vegetation. Fragmentary remains can be recognized as reeds, ferns and trees similar to existing vegetation. For the most part, though, the vegetation differs greatly from that now found in the valley. Two main types of coal predominate, lignitic and earthy coal — both containing coarse plant debris, including stumps and trunks of trees.

In its raw state, Latrobe Valley brown coal is soft and crumbly with a high moisture content. The raw, moist coal is dried out at the generating station with the use of furnace gases, simultaneously pulverized, and blown into the furnaces where it is burnt in suspension.

The commission also operates a flourishing briquetting industry. Dried and compressed, the coal makes a high-grade fuel for domestic and industrial use in general.



human factors at work

How important are emotional factors when it comes to health and work? Do they play a leading role, or can they be safely ignored? In this article Ontario Hydro psychologist W. Caron Jones shows how our minds react to frustration and stress and how we can learn to live with twentieth-century tension. It is based on his recent speech to District 4 of the Ontario Municipal Electric Association.

Doctors in private practice report that half their patients consult them because of symptoms produced by stress. Half the hospital beds in this country are filled by people suffering from functional rather than organic illnesses which are ailments resulting from actual physical infection or disease.

Over the years research has identified as induced or aggravated by emotional factors, in whole or in part, the following: ulcers, hypertension, angina pectoris, coronary thrombosis, asthma, hay fever, migraine, arthritis, goiter, some cases of diabetes, many forms of skin disease, neuritis and sciatica.

A quarter of Canadian workers suffer reduced effectiveness because of personality problems or emotional or mental illnesses. Four per cent of all industry's man-hours are lost because of absentee-ism resulting from illnesses, a considerable proportion of which are emotional in origin.

And the cause? In a capsule it is the nature of man interacting with the nature of his work or life.

As a thinking, feeling, doing, living organism man has a variety of needs. Some of them, such as food, clothing and shelter, are directly related to physical survival. But a man also has social and personal needs. He has to belong and must participate in group activities; he needs recognition, approval, affection and the opportunity for achievement and self-expression.

It is the unsatisfied needs which provide the driving force of our behavior. Needs which are satisfied cease to provide any incentive. For example, having finished a large dinner we are not likely to be influenced in our behavior by the incentive of more food.

Needs also recur. The fact that we have just eaten doesn't mean that our need for food has been satisfied for ever. And needs exist in a kind of hierarchy. As the primary ones are satisfied, others rise to the surface and become more demanding. These needs exist in almost infinite variety. One person may be primarily concerned

with money, another with security, others with adventure, pleasure or comfort.

Then there's the related concept of the selfpicture, a person's picture of himself. Regardless of the accuracy of this picture it probably represents our most precious possession and frequently constitutes the critical factor in determining behavior. Thus we will probably become most extreme, desperate or determined whenever we think this precious picture is under serious threat.

We find ourselves constantly thinking and acting in certain ways because they appear appropriate to the kind of person we think we are. Similarly, our picture is likely to exert a critical influence on the kind of treatment we expect from others. The amount of scope we are given in our job, the degree of independence or the degree of security, close supervision and protection we enjoy are all likely to be consistent with this picture.

There is a further aspect of the nature of man and that is the dynamics of behavior, the cause-and-effect process which leads to action. It may be expressed as a formula: N = F = S = A.

N stands for the unsatisfied needs, F for the frustration or barrier to the satisfaction of our needs, S represents the stress which arises from prolonged frustration and A is the action we are finally moved to take in an attempt to reduce the stress. An awareness of this sequence is of real value in attempting to understand our own behavior or the behavior of others.

A typical response to stress is aggression. This can be very effective if it involves increased effort and greater determination. But the aggressive response may actually become a handicap if our feelings escape conscious control and merely result in lost temper. Uncontrolled aggression may also express itself as a general truculence or hostility, in the form of resentment or destructiveness.

(continued on next page)

caution/

Thus we find people engaging in malicious gossip, making much of superficial grievances or taking their anger out on their subordinates, members of their family or even the family dog.

Another quite opposite reaction is that of with-drawal. This may take the form of flight. At work we may leave our desk on a transparent excuse for short periods of time or we may actually stay away from work. The flight, however, may not be actual, it may be psychological. We may remain physically on location but indulge in a world of day dreams. Sometimes this psychological flight expresses itself in regression, the process of comparing the present with the past to the discredit of the present and the glorification of the "good old days."

Withdrawal may result in what we call freezing or fixation, in which a person's behavior becomes rigid and is frequently the basis for repeated errors. Or it may express itself in apathy. All of us have known people who retired long before they were removed from the payroll.

Responses like these have real significance in the business world. Supervisors are no less prone to stress than the ordinary employee, but in their case the results of emotional disturbance can have far more drastic effects.

Researchers have described work as representing the best means man has yet devised for expressing his instinctual energies, aggressive drives and his creativity. They tell us that work meets many needs, including a means of satisfying our social craving for affiliation, status and prestige, and that it allows the individual to integrate himself with society.

But is this a true picture? When we examine the reality as we find it in industry, the situation frequently appears to be that the nature of man and the nature of work are simply incompatible.

Two developments are largely responsible for this: firstly, there is the industrial revolution with its introduction of mechanization, fragmentation of the job and, consequently, the dehumanizing and depersonalization of the job experience. Secondly, there is the corresponding managerial belief that people are merely a particular kind of machine sharing the machine's inert neutrality toward work, that they are controllable as instruments of production by purely physical means such as adequate working conditions — light, heat, ventilation, etc. Other such controls would include physical rewards like pay and fringe benefits or physical penalties like suspension and dismissal.

In addition to general influences of this kind, which have tended to sterilize the work experience as a means of satisfying human needs, specific factors in the work setting serve to provoke excessive feelings of frustration and stress.

One factor that puts managers and supervisors under considerable tension is the increased pace of business activity associated with the acceleration of world-wide communications, the accelerated rate of technological change and the progressive growth in the size of the companies. Another is the trend toward governmental involvement in our economic life and another is the necessity of dealing with labor unions.

The supervisor is often frustrated by the hostile, cynical and detached attitudes of the employees and he must also frequently contend with conflicting divisions within the organization. Thus we may find a company divided vertically into branches like accounting and finance, sales and promotion, while it may also be divided horizontally into various levels of management, each sealed off from the others by impenetrable sound barriers. The foreman, or first-line supervisor, frequently finds reserved for him his own particular form of hell. He is the man caught between management and workers.

As for the workers themselves, frustration and stress can stem from a sense of futility, from supervisors who are inadequately or improperly trained. There is the stress which comes from supervisors who are so preoccupied with their own anxieties and insecurities that they resort to immature methods of exercising their authority. Lack of two-way communications and the lack of clear knowledge of the company's structure and its objectives in turn create a void or vacuum in which the worker strives in vain to develop some sense of order or purpose.

Is there anything we can do about all this? Well, here are three general approaches.

Firstly, we must expand our view of work to fit the facts. These facts tell us that work is not necessarily an evil and not exclusively economic, but actually that it represents the primary means whereby all of us can satisfy our greatest needs — physical, social and personal.

Secondly, we must expand our understanding of people to fit the facts. These facts tell us that people are not exclusively economic animals, nor are they by nature negativistic, hostile and apathetic but in fact they are dynamic organisms behaving in ways seen by them as reasonable ways of dealing with reality, as they see it, in pursuit of their goals.

The third approach is to take whatever action is possible to incorporate this larger understanding of the nature of work and the nature of people into our own thinking, planning and behaving in the world of work.

Regarding the work setting, improvement may result by attempting to remove or reduce any sources of frustration and stress we can identify. This means trying at all times to sharpen our awareness of these sources.

Regarding the individual, there is a third and more effective response to frustration and stress than either aggression or withdrawal. This is the response of problem-solving, an approach which attempts to be objective in its appraisal of the situation, realistic in its assessment of what the current real factors are and resourceful in the ways in which alternatives are attempted.

Attempts should also be made to increase what we call the person's frustration tolerance — his capacity to live with or to tolerate frustration and stress. This can be done by developing a greater sense of reality and by expanding the number of socially safe ways of expressing our feelings. Finally, the greater the number and variety of sources of satisfaction we can establish in the fields of recreation, hobbies and community activities, the less vulnerable we become to specific individual sources of frustration and stress.

neters for good measure

lal O'Neil

nning tirelessly, these ctrical watchdogs p tabs on our living habits n absolute accuracy



a well-calibrated meter, mix it with some city, add a home, sprinkle in some modern nees, stir well and you have the recipe satisfied utility and a happy customer.

ote the first ingredient. If the meter's calinis off either way (registering low or high) ing to cost the customer money. If the meter ning fast, he's billed too much. If it's runco slow he'll still pay indirectly because costs nly be recovered in rates.

e two million customers served by Ontario and the 352 associated municipal utilities, ver, there's little danger of either of these nctions,

from the fact that electric meters, just like narket scales or gas pumps, are guaranteed ate by federal law, metermen (not to be conwith the man who reads the meter) refuse to let a meter less than perfect leave their hands. Whether it's a single-phase, kilowatt-hour meter like the one in our homes, or a more complex three-phase meter used to measure commercial and industrial consumption, it's a matter of pride.

For the record, a meter is simply a motor. The power spins a disk which, in turn, moves the dials to record electricity consumed. Harking back to our text books, we will recall that a watt is the basic unit of electric energy. When 1,000 watts is supplied continuously for one hour — we have a kilowatt-hour.

As for the term single-phase, it means a wave of power in which the voltage pulsates 60 cycles each second. Three-phase power minimizes the pulsating effect by introducing successive waves.

Because motors rated at five horsepower or above operate more efficiently on three-phase power, this is the type supplied to industry and three-phase meters are used to measure it.

Three-phase service is also billed differently to single-phase. Industrial and most large commercial consumers establish a monthly 20-minute peak load. They pay on the basis of this peak and also on straight energy consumption within the monthly peak. Domestic billing, of course, is done only on the energy consumed during the month, with the exception of energy for flat-rate water heating.

The domestic single-phase meter is an intricate jewelled instrument that, by government decree, must be overhauled and recalibrated at least once every six or eight years. And this is where the meter-

- 1. Meter repairman Bruce Bolan gives a meter, fresh from the reverification line, a close check. The jeweller's eye glass enables him to verify the mechanical state of the dial assembly.
- Several meters undergo the final electronic, light-load test simultaneously before going to the government inspectors. Ted Paju is adjusting one of the meter's rotors.

the meterman needed scales

This 1882 electric meter, designed by Thomas Edison, is a prized item in Hydro's historical collection. When electric current passed between two electrodes in the bottle, a small amount of metal was transferred from one to the other. To "read" the meter, metermen had to weigh electrodes to determine how much power was used. The bulb, hooked to a thermostat, created enough heat to keep the electrolyte in bottle from freezing.



man shines. Under the title of "reverification" he checks, cleans and recalibrates these meters in his shop.

At Ontario Hydro's new meter shop in Etobicoke, technicians do the reverification job for Hydro's direct customers so well that, when the meters cross the shop into the government's inspection and sealing area, only two-thirds of one percent are rejected. The municipalities have either their own meter shops or make arrangements to have their customers' meters checked elsewhere. Ontario Hydro processes about 300 meters each day and its central shop is set up much like an assembly line, the instruments flowing smoothly from man to man.

Meters come into the shop from Hydro's 77 operating areas across the province. They are selected by rotation to conform with the once-ineight-years regulation and are augmented by



damaged meters or others removed for various reasons.

On arrival they are washed and painted. As John Witbeck, manager of services, says: "We're probably the only establishment that washes and paints its product before anything is done internally."

The meters are then dismantled and terminal screws replaced if rusty. Dial assemblies, which contain jewel-pivoted gears, are given an ultrasonic bath to remove minute dirt particles. High-pressure air is used to dry the components. Parts from each meter are kept together in numbered pans and as sections are checked they are returned to the correct pan. After re-assembly, the meters go to technicians for accuracy tests under full and light loads.

For the full-load test, the meter is connected up

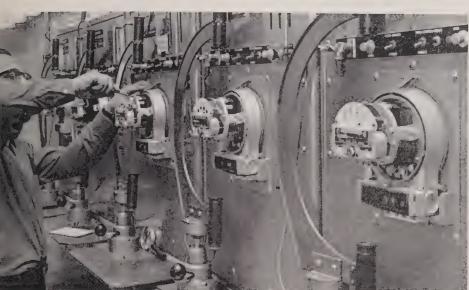
and a pulsating light trained on the lined e of the revolving disk. The meter passes if t lines appear to stand still.

The second test is also conducted with a libeam, but this one is similar to an electric. Two small holes in the disk admit the bear trigger an electronic counting mechanism records the number of measuring pulses complete revolution of the disk under a knowledge.

With the fitting of a new gasket and glass cover, the meters are ready for checking are sealing by Department of Trade and Comninspectors.

To meter all customers and allow for repair and reverification, Hydro maintains more to 600,000 single-phase meters. Not all of the however, are subject to the once-in-eightroutine because about two years ago Hydrond the Department entered into an agree ert Barr checks the speed of the disk or full-load. If markings on the disk's appear to be standing still under nulsating light, the meter passes est.

- 4. Claire Faulds and Bert Croisette, field planning co-ordinator, examine one of the hundreds of thousands of cards used to keep track of meters. A computer tape record will soon replace the card system.
- 5. Less than one per cent of the meters passing through the meter shop is rejected by government inspectors like Dale Clauson. Their tests are similar to those Hydro does a few yards away.









r which "sampling" is permitted.
does the scheme work?

ards the end of the normal eight-year seal d, Hydro provides the government with of serial numbers for one group of meters, the same type and all government-sealed o successive years. From this list, which ably contains between 10,000 and 15,000 rs, the government selects 200 at random. It then brings this sample, with the seals bken, in for government testing only. If the all within acceptable limits the entire group which the sample was taken is certified for fears.

ect, this technique accomplishes the same tive as the traditional procedure while oving on it since both the government and have a good indication of how the group of meters is performing every two years.

"Under the system of bringing meters in every eight years, it's costing us about a dollar a year per meter for shipping, removing, reverifying and re-installing," says Mr. Witbeck. "Under the sampling method, this cost is cut almost in half."

These costs are over and above the 75-cent charge the government applies each time a meter is inspected.

Mr. Witbeck says that Hydro is the only utility in Canada at present using the sampling technique, but he feels many other utilities could benefit from it. The Canadian Electrical Association is now working with the government to this end.

Like many other Hydro operations, meters will soon come under the watchful eye of a computer. A magnetic tape will replace the existing two-card system employed to keep track of meters, one card staying at the meter shop and the other at the area office. The computer will also store more information than the cards.

Today's meters have a service life of about 25 years, largely because friction has been reduced to a very low level in the rotor assembly. Rotors are now supported magnetically, minimizing wear and giving meters a high degree of accuracy over their whole life span.

"That's why we think checking them every eight years has become as unnecessary as giving a car a major overhaul with only 10,000 miles on the speedometer," said Mr. Witbeck.

rub-a-dub-dub, the death of a tub

Come one, come all! Crowd in closer folks, there's still plenty of room down in front! Here we have the miracle of the century! See what these marvels can do for you!

Ladies, free yourself from drudgery . . . let these electrical gems lighten your load.

No longer are you lashed to washboard and tub . . . Put Sir Adam and his kilowatts to work . . . Your clothes will come out brighter than bright, whiter than white, and it'll cost you only pennies

No. don't leave yet; I've mentioned only one of these marvels, there's plenty more to come . . . throw away your flat iron . . . why bother lighting that old wood stove in the heat of the summer to press your husband's shirts. . . . Keep cool, an electric iron won't put a drop of sweat, excuse me, perspiration on your brow . . . just plug it in and

Next on our list is modern femininity's right hand. the electric vacuum cleaner . . . it beats . . . it sweeps . . . it cleans . . . it even straightens the nap, and all you do is guide it across your rugs or linoleum. . . .

Maybe this imaginary spiel based on these newspaper and magazine advertisements of the preflapper era is a bit less subtle and sophisticated than today's Madison Avenue approach but methods like this did get the message across.

Mind you, it's lucky we have these vintage ads at all. Far from being antiseptically preserved in an electrically-controlled atmosphere of the archives, they were rescued yellowing and brittle from a long-neglected corner of the old Welland Hydro service building.

The late H. F. Shearer, who at different times headed both Welland and Smiths Falls Hydros, was the historian responsible for the collection. And somehow these copywriter's nightmares escaped the incinerator during their 50-year incubation.

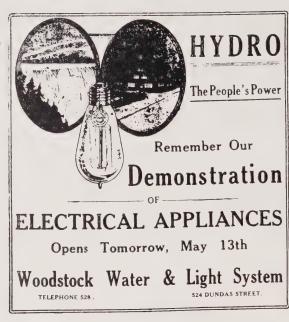
People in "the good old days" weren't sold on the wonders of electricity. Nor were its applications nearly so numerous as they are today. Basic items like washing machines, vacuum cleaners, grills and fans were coming on strong but 50 years ago no one had heard of radios or clothes dryers, freezers, toothbrushes or air conditioners powered by electricity.

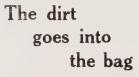
And in those days, appliance sales were sparked by the municipal utilities themselves since they had to sell the basic concept of doing things electrically. They set up their own "Hydro Shops" and gave demonstrations. They even had their easy time-payment plans and would place appliances in customers' houses on a free trial basis. It wasn't until later that private dealers stepped into the picture to largely take over appliance retailing.

The utilities were load building then for the same reason their modern-day counterparts urge us to "live better electrically." Only their slogan was "do it better electrically."

Could it be that a half-century from now some bright young copywriter will bring us up to date with something like "psychedelize better electrically"?

half a century ago they were urging people to "do it better electrically" with eye-catchers like these





HE secret of thorough cleaning is actual removal of all dirt.

The vigorous action of a Hydro Vacuum Cleaner loosens dirt and dust—then draws it up into the bag.

Other methods of carpet cleaning, such as the broom and dust pan, fail to remove dirt—they just move it. A great deal of dust that the broom stirs up settles back on the carpet and on other furnishings.

The powerful suction of a Hydro Vacuum Cleaner draws out the dirt without harming the carpet.

And Hydro cleaning safeguards the health of the family for the air is not filled with dust when carpets are oleaned - all the dirt goes into the hag.

Ask for demonstration and partic-ulars of Hydro easy payment plan

Toronto Hydro Shops

Yonge St. at Shuter Yonge St. at Front Gerrard St. at Carlaw

HOUSE CLEAN Time is HOOVER

W H-E.S.



The HYDRO SI

Turn the Dark Inside Ou

WITH AN ELECTRIC WASHER-WITH AN ELECTRIC WASHEN ... washing cannot be done without a lot of the kitchen and back-aching labor. Who we will place an Electric Washtrial. You can wash the heaviest of blastke with this wonderful Electric Washe and money. It will pay for itself with Remember this is not a luxury, but it is a stration beginning today.

> WOODST WATER and SYSTE

524 DUNDAS ST.





Kribs Washers

We are entirely out of stock just now, another shipment is on the way. Some of these machines are promised. On account of this delay and for the accommodation of our customers we are

The 14 Days Free Trial Period to December 31st.

No. 5 Kribs Washers Fill the bill Plan to give useful, Servicable Christmas presents

The Kribs Electric Washer is one

PHONE FOR A DEMONSTRATION PHONE SO

THE HYDRO SHOP



"Do It Electrically"

Cut tomatoes in slices [4] inch thick, roll in bread crumbs and egg, and saute in butter in the upper part of the grill Broil bacon in the lower part at the same time and serve with the lomatoes.

ted Cheese Sandwiche

Cut bread in slices about 1, inch thick and spread with mustard and grated American cheese. Toast in the lower part of the grill, at the same time fry slices of bacon in



A GLANCE at the accompanying recipes will give you some idea of what is possible in the way of table cookery on an electric grill

The simplicity of this method of cooking added to the excellence of the food so prepared—an excellence that would please the palate of the most exacting epicure—suggests that every woman should have one of these modern appli-

Light or heavy repasts- -plain or fancy---can be right of neavy repasses spann or rancysecan of prepared on an electric grill with equal ease and at low cost for current. We shall be glad to demonstrate a electric grill any time between and

broils, fries, boils, toasts, bakes or roasts, by simply changing the posi-tion of the containers. Plug into a "con-venience outlet," snap the switch and the grill is ready for work.

(Your Name and Address)





WHEW! IT'S HOT!! You Say

That's what everybody Says

Last night we were sold right out of medium priced fans A limited supply of the famous

Robbins & Meyers Fans

came in this morning, get yours before it is too late A Robbins & Meyers Fan takes the swelter out of this torrid heat

A few Canadian General Electric Fans 12 and 16 inch Oscillating and Straight Blow, left! Come in and see them

THE HYDRO SHOP

14 Russell Street East

Smiths Falls, Ont.







Call-Fan Hendquarters. Phon

Electrical Demonstration

"THE HYDRO SHOP" Monday, Tuesday and Wednesday MARCH 10th., 11th., 12th.



The Labor Saving and · Western and Land Lines to

An Invitation is extended to all who are interested, to visit the HYDRO SHOP on Monday, Tuesday and Wed-

THE HYDRO SHOP

TELEPHONE \$00.

en Lenning



Madam!!!

Let me introduce Myself

'1900' Cataract Electric Washer

I am willing to come and do all your heavy washing for

WEEKS ON TRIAL

You can depend on me to do your work when you want it done. All it will cost you is just my board (about 2 cents per week.) I will wash the finest of clothes without injury to any fabric or battons and I will thoroughly cleanse the heavy pieces to your satisfaction. I have convinced others and they are bappy Why not you? Just phone 500 and I'll come for a trial.

The Hydro Shop

HYDR

Will Raise the National Standard of Health and Happiness if you put it to Work in Your Home MAKE YOUR CHOICE



The Old Way The New Way

Why should delicate refined women slave at the wash board over a steaming slopp tub or crank eternally at the wringer. Hasn't Father quit cranking the car'

A snap of the switch A snap of the switch and hydro does your washing. This is the cheaper, better, clean-er, quicker way. Satis-faction guaranteed Come and see it.



Daily Demonstration of Vacuum Cleaners, Electric Washers and Other Wonderful Appliances

Woodstock Water and Light System

524 DUNDAS STREET.

hydro convenes in toronto

A Centennial atmosphere prevailed throughout the busy, 58th joint annual meeting of the OMEA-AMEU, held in Toronto, February 26–March 1. The two associations represent the elected commissioners and senior staff of the province's municipal Hydro systems. Special ceremonies marked the official opening of the Hydro Hall of Memory at Niagara Falls on the day preceding the convention and delegates viewed films of the event at the meeting. A toast to Canada featured the main luncheon meeting and a special information booth handled many inquiries on Expo '67. A record 1,500 delegates from across Ontario attended the gathering at which Hydro matters ranging from power costing to public relations and from government legislation to identification cards were discussed and acted upon. Some of the highlights are presented here.

·meet th

Dr. J. D. Fleming, OMEA

Dr. J. D. Fleming of Dundas is the new pre of the Ontario Municipal Electric Association did they elect a dentist to head this imp organization whose members set policy for ally all of the municipal utilities in the provin

It's all part of the unique municipal Hydro's employed in Ontario to ensure that policy decare in harmony with the needs and aspiration the community.

The 1,300 utility commissioners across the ince, nearly all elected, represent a broad section of occupational interests. They is merchants, doctors, lawyers, insurance a and at least one honorary Indian chief. With framework of policy established by these consioners, skilled managerial staffs handle the diday technical and administrative operations utility.

And why should a leading citizen lik Fleming devote so much of his time and ene Hydro affairs? In his own words:

"I need an outside interest to take me awa the pressures of my profession. Besides, I thi all owe something to the community and this way I choose to make my contribution."

At present serving his third stint as chairr Dundas PUC, this genial pipe-smoking ind received an early indoctrination into the wo of public power. His father, the late Fred Fli was for several years a commissioner in Wa and introduced his son to the annual C AMEU meetings in Toronto. Dr. Fleming also lifelong friend of his father's age, Wilton I who is still on the Waterford commission.

Dr. Fleming graduated in dentistry fro University of Toronto in 1939 and imme took up practice in Dundas. "There were two dentists there already and for 20 years I w junior dentist in town," he recalls.

In those not-too-distant days he was bachelor and stayed at a local hotel for \$9 a including his meals. He has since married the father of three children. His eldest day about to graduate in geography at the Unive British Columbia, he has a son studying m at Queen's University and a daughter a school

Dr. Fleming has served 10 years on the commission during which time the num residential customers has doubled. There land for industrial development in the area, of the PUC's greatest coups has been the ition of electric heating in the \$3 million H Secondary School, which opened last Sep

This educational showpiece, part of which circular construction, uses off-peak or power to heat water held in storage until to warm the school. Once Highland has complement of students it will account for kilowatts of the utility's load.

In 1961 Dundas PUC built itself attractive quarters in the town's main street. The serves 4,600 customers and has a peak deposition of the serves 4,500 kilowatts.

Dr. Fleming is a past president of OMEA Dir

residents



Dr. J. D. Fleming

nairman of the OMEA's Resolutions Com-

ddition to his duties as commissioner, Dr. g has at one time or another taken a keen t in the social life of his community. He has as assistant scoutmaster and has been a er of the local Lions' Club ever since its ion, although his activities in the latter ortion go much farther than that. He is a past ent of Dundas Lions' Club, has spent a year rict governor, was chairman of the board of fors for Ontario and Quebec and was presif the Canadian Association of Lions' Clubs. ming also headed a local Lions' committee sible for a 10-unit low-rental apartment g for senior citizens.

ough he maintains that he will stand on no ox during his presidential term, he has very e views on upholding the existing system of ndent municipal utilities.

ertainly believe that self-supporting public s should be kept separate from those supby taxation," he says. "There are bound to nges and the OMEA is not objecting in any regional government. We are not fighting id amalgamations and save jobs, we are g to save a principle."

leming thinks the answer is a sound public is program, but that the association must t its own PR house in order.

ink improved public relations is the really ant issue facing the OMEA," he says. "We en too much for granted and I think our k is to impress upon our own commissioners portance of the role they play."

doctor will doubtless be doing some corwork during his year in office. And it could his message will have a familiar ring to anyno has gazed open-mouthed at the business a dentist's drill: "This may hurt a little."

Gordon Stacey, AMEU

Gordon Stacey may have mellowed a little since the day he leaped from his stricken bomber at the height of the Second World War and parachuted to safety over Holland.

Since then he has steadily worked his way up the electrical ladder to head one of the most efficient, if oddly named, municipal utilities in the province — The Guelph Board of Light and Heat Commissioners. And this year he reaches a milestone in his career as the new president of the Association of Municipal Electrical Utilities. The association represents the managers and senior staff of the municipal Hydro utilities of the province.

But Gordon has never really lost his love of the air and he still retains a keen sense of fun.

"I prefer to be known as Gordon Arthur Stacey, but I always sign myself A. G. Stacey. Whoever heard of a Hydro manager with the initials GAS?" he asks.

This soft-spoken individual was all set for a career in aviation after his first flight in a bonerattling and draughty Curtis Jenny. He completed the aircraft option course at Toronto's Central Technical School and in 1940 started work at the old Barker Airport, which occupied the then wideopen spaces at the intersection of Dufferin Street and Lawrence Avenue.

The war in Europe was in full swing and Mr. Stacey's company quickly received a contract in connection with the training of instructors under the Commonwealth Air Training Plan, operating from another long-gone airfield in Weston.

"They were mostly bush pilots or pilots from the United States and they were a rum group," he recalls. "I got plenty of unofficial practice because they wanted someone to try their training skill on."

But the young Stacey had itchy feet and by the end of 1942 he was serving with the RCAF as a navigator, flying on bombing raids from bases in Yorkshire, England. His aircraft was shot down over occupied Holland, but he evaded capture and made his way to Belgium where he contacted the resistance movement. He was with them until the liberation of Liege five months later.

After the war, Mr. Stacey enrolled in engineering at the University of Toronto, the first two years being spent in barrack-room conditions at Ajax.

"The university had taken over a war plant there to cope with the huge enrolment," he explains. "The military-type conditions didn't bother us exservicemen, but some of the other students found it hard going."

During his vacations he worked for Ontario Hydro's Communications Survey Group, which was installing telephone lines for the latest hydroelectric developments at Des Joachims, Chenaux and Stewartville. On graduation in 1950 he obtained a job as first engineer with the Guelph Board of Light and Heat Commissioners. He subsequently became electrical superintendent, assistant general manager, general manager and chief engineer and finally, last year, general manager and secretary.

That name, incidentally, has a long and tangled history but it seems to have evolved from a munici-



Gordon Stacey

pal department managed by the Fire, Light and Water Committee of council. The "Heat" part of the name recognizes the fact that for many years the Guelph utility manufactured and distributed coal gas. Now, of course, it means electric heat.

During his 17 years with the utility, Mr. Stacey has seen the area it serves increase at least fivefold and the electrical load rise from 9,000 to 63,000 kilowatts. He now heads a staff of 78 that looks after the needs of 15,000 customers.

He has played an active role in the affairs of the AMEU, starting off in what was the Grand Valley Metermen's Association, of which he became president. He was made a director of the AMEU's old West Central Region, which eventually merged with parts of the old Niagara Region to form District 6.

He became a director-at-large of the AMEU, representing the medium-sized municipalities throughout the province, and headed the association's General Administrative Board for three years. "All the angry young men of the association seem to gravitate to this board and it's an extremely good education," he says.

Mr. Stacey was elected vice-president of the AMEU last year.

What of the association's future?

"In any kind of planning you have to build on the past and the AMEU's inheritance is as good as any," says the new president. "Over the years we have evolved from a purely engineering association into one concerned with training, finance and industrial relations to say nothing of marketing and sales. I see us primarily as a management development organization, although exactly how we will evolve is anybody's guess.'

Even if he'd stayed in aviation, one feels that Gordon Stacey would still have been a success.

-resolutions spark debate

Ays outnumber nays 2 to 1

Bouquets and flowers have their place at every convention and the 58th annual meeting of the OMEA was no exception. But once delegates got down to the business of resolutions they didn't mince words.

Two action-packed sessions were ticked off with parliamentary precision in spite of considerable outspokenness and a refusal to conform with every recommendation of the Resolutions Committee. Of the nineteen proposals discussed, one was deferred, twelve were approved and six were defeated. Some highlights of the sessions follow.

No interruptions

Delegates backed their Government Legislation Committee, which next month submits a brief recommending compulsory arbitration in labor disputes that involve the province's public utilities. The brief will be presented to the Rand Commission inquiry.

In a broadly worded resolution, members called for legislation to "forestall any action directed toward preventing, curtailing or limiting in any way the continuous supply of electrical energy by a Hydro utility to its customers".

On behalf of Toronto Township Hydro, W. E. Wright said his utility was the first with 1,000 electrically heated homes and since they had promoted electric heat they must be able to ensure a continuous power supply.

"It would be disastrous if anything happened to the supply over a period of cold weather," he said.

A. K. Meen, Q.C., North York, explained that the proposal was really a ratification of steps already taken to submit the brief to the Rand Commission. He said that in a poll of the association membership, 98 per cent of those responding favored submitting a brief and 78 per cent thought it should recommend compulsory arbitration.

Who should pay what?

How much should a municipal utility pay when new highway projects force it to relocate power lines and lights?

Members heard that under existing practice the Ontario Department of Highways chips in 50 per cent of the labor costs and perhaps even 100 per cent under certain conditions or by previous agreement.

Said Gloucester Hydro Chairman A. J. Bowker: "Our utility has been involved for one-and-a-half years in several road relocations and we are still trying to obtain such agreement. If anyone has had better success, I would like to know how they did it."

Niagara Falls commissioner G. L. Burley moved the resolution, saying his utility was caught up in road-widening schemes about two years ago.

"Relocation work involved a great deal of money, disruption of services and the Highways Department frequently changed its plans, which cost us extra money," he said.

J. T. Barnes, Sarnia, spoke in support but warned that utilities should start negotiations before highway improvement began.

Opposing the motion, Mayor L. Dunlop, Ridgetown, commented: "This seems like one more deal to get someone else to pay."

It was decided that the matter should be pressed

Underground movement

Another "who should pay?" resolution received a cold shoulder from the Resolutions Committee. This one urged that every effort be made to publicize the existence of a statute under which extra cost of changing from overhead to underground distribution may be borne by those taxpayers with property fronting on the streets affected.

Dr. J. D. Fleming, Dundas, chairman of the Resolutions Committee, said they recommended it be turned down for several reasons. One was that municipal taxpayers had so far contributed nothing through the tax levy toward the cost of providing electrical service.

"There is no end saving but rather an overall increase in cost both to the utility and to the immediately benefiting customers," he added.

Delegates agreed by turning thumbs down on the resolution.

Pay up or else

On the subject of those who don't pay, delegates reaffirmed a motion passed in 1965 urging the OMEA to obtain legislation enabling utilities to refrain from supplying or from continuing to supply customers owing money to other utilities.

Port Elgin Mayor W. A. Davey raised three objections. First, he said, every operation must expect some losses. Secondly, it was bad for customer relations and, lastly, utilities refusing to supply a customer might get the wrong person and end up with a law suit.

Not so, voted the majority, in approving the motion.

Too much pussy-footing

Andrew Frame, Burlington, accused fellow delegates of timidity in dealing with the government. Mr. Frame seized on a remark by Dr. Fleming that the Resolutions Committee thought a proposal should be thrown out "because it would be most inappropriate for the OMEA to presume to instruct the Ontario Municipal Board".

Said Mr. Frame: "I disagree very strongly with the Resolutions Committee. It is time we quit pussy-footing around with the Ontario Government."

He added: "We have a strong case here. We have rights and responsibilities given to us when we are elected as commissioners and it is about time we stopped shirking these rights."

The resolution urged the OMEA to ask the Municipal Board to apply a section of the Power Commission Act which stipulates that debentures issued for electrical purposes should not be included in ascertaining the limit of a corporation's borrowing powers.

Several delegates said their utilities were experiencing great difficulty obtaining capital funds and the proposal was carried in spite of the Resolutions Committee recommendation.

Benefits not mobile

A proposal urging reciprocal agreements between Ontario Hydro and the municipalities to cover the transfer of benefits for staff moving from one utility to another was turned down. Dr. F said it was difficult to transfer such things leave and seniority, which were subject to ation between employer and employee.

A similar fate was suffered by a motion that all new line construction by Ontario H rural areas likely to be annexed by a municonform with the standards of that munic Dr. Fleming said the proposal did not practical without universal standards amountilities.

Referred straight to the AMEU was a residrawing attention to the voluntary nature of ation standardization and improvement stutility employees and asking that the AN vestigate a more efficient approach in the competition from other forms of energy.

Also defeated were resolutions object Ontario Hydro customer appliance summunicipalities where similar surveys were conducted; a move to reactivate the OMEA I and Insurance Committee to consider a mentary pension plan; and a proposal religionation Hydro promotional practices.

Delegates did, however, urge their associ continue to press for the appointment of a ni Ontario Municipal Employees Retirement board provided for by statute, suggesting should include representation from the ON

Two years between changes

Modifications were called for to the Hor nomics Equipment Program. One resolution mended that the manufacturer and other in parties should make an equal contribution the cost of the program; another sugges appliances be replaced every two years in annually. Both were carried.

Introduced from the floor by Capreol Hy a proposal favoring rate reductions for the of electrically heated summer cottages. Vowners now pay \$40 for the first 700 k hours or less, 2.4c a kilowatt-hour for the land the balance at 1.35c a kilowatt-hour recommended that the second step be elfor customers who qualify. The propopassed on to Ontario Hydro for study.

Other resolutions approved included vision of identification cards for all permunicipal utility employees and commit creation of a task force to consider the status of the Hydro symbol and its application of a task force to consider the status of the Hydro symbol and its application of a task force to consider the status of the Hydro symbol and its application of

)r. Wilson on pr

J. E. Wilson, Barrie PUC mber and past-president he OMEA, puts PR front in utility thinking

c relations has been handicapped in the past ingrained suspicion of people towards any ilized effort by a public body to carry out a rogram. In more recent times, changes in popinion have made public relations more table. Today, any public body will be critif it does not make available to citizens lete information about its activities.

planizations such as government agencies utilities are judged by a sterner code — properly so — than a private agency and its

blic relations, good, bad, or indifferent, grows If the many contacts a utility has with its mers day by day. The objective always d be to see that these contacts are in accord good public relations practice. Points to are: the way services are performed, bills gred and collected, the way employees talk stomers or write letters to them, the appearof buildings and trucks, the impression made representative of the utility speaking at a meeting, and the way in which a local nunity problem is handled with local citizens, dually or through their local organizations. tall these instances good public relations is pbricant that keeps the business machinery public utility running smoothly.

interesting example is the attitude of custs towards electric rates. A customer who that rates are unfairly high may be indignant ustrated because he feels helpless against a that is a monopoly. It is incumbent upon a first to make sure that rates are fair and as spossible consistent with good service and, dly, to create as widespread an understand-spossible of that fact. This need moves y into the foreground when the time comes large the rates — particularly if the change is yed.

stance, during storms or other catastrophies g disruption of electric power, crews work speed to restore services and generally do a lass job. But many utilities have received aints because their customers did not know was being done to help them.

reate public relations difficulties. But steps e taken to gain public understanding and the the chances of public acceptance. The c substation or distribution station used to it a plain utilitarian structure, perhaps only ed-in mass of transformers and switching r low it is much better looking. New buildings med with an eye to architectural appearance ith attractive landscaping are winning actice in the community.

vently there is much work to do if a satiscy public relations program is to be maincy. And this work may be divided into two



Dr. James E. Wilson

categories: first, the public relations that is *everybody's* responsibility, secondly, the public relations that is *somebody's* responsibility.

The only way a public utility can maintain a good public relations program is to recognize that most public contacts fall into the category of everybody's responsibility. Public relations is inherent in almost every plan, decision, act, word or deed of just about everyone in the utility from top to bottom.

This applies to employees who handle customers' problems, orders, billings, installation of services, meter readings and many other jobs. It applies to employees on construction and repair jobs, pole setters, linemen and trouble crews. They create public impressions not only by the way they do their work but also by the consideration they show for individual citizens.

Understanding and leadership in public relations problems must come from people in supervisory positions and those at the top, including commissioners and the general manager.

The importance of planning and acting to assure good public relations must constantly be held before personnel at all levels. This can be done in a number of ways. Counselling on public relations is a day-by-day job. Its practice can be encouraged through orientation classes for new employees, service training classes, employee communications media and supervisor training.

The kind of public relations work that is *some-body's* business falls to the general manager and, by his delegation, to the public relations staff. This staff has three main responsibilities:

- 1. Advertising, whether promotional or institutional. This will play an important role in the overall public relations program.
- 2. Public information and publications dealing with the research of information and the preparation of written material.
- 3. Press relations, in making information available to news-gathering media, individuals and organizations. Photography is an important vehicle.

Advertising pictures, engineering and construction photographs and pictures needed in legal matters are of value.

A principal publication of all public utilities is the annual report, which is required to be submitted annually to the mayor and council of the municipality. Its public relations potential is broad. The financial community provides a number one audience. It is of interest to banks and investment groups and to the local newspaper. It would cost too much to give a copy of the annual report to all customers but a condensed version could be sent out with the customer's bill.

Speakers for civic, business, service and other meetings in the municipality are always in demand and every advantage should be taken of this opportunity. In addition to outlining the complex operation of a utility, the speaker should include some history of Ontario Hydro. The advantages of public ownership in the electrical field must be stated over and over again.

With regional study recommendations that the duties of public utilities commissioners be taken over by a committee of council, the need for a vigorous PR program among the municipalities has never been stronger. If only to preserve the system we believe to be right, let us give it our full support.



Basic principles of production in the ligi industry have changed little over the even though the process is automated. Pictures oppos overleaf were taken at the p the London-based Service Lamp Com

the bulb-snatchers' conundrum

Even the most experienced bargain hunter has his blind spots and nowhere do false assumptions and confusion predominate more than with the pennies we put out for electric light bulbs.

These incandescent wonders lie largely ignored amid the soup cans and asparagus of clamoring supermarkets until that irritating day when the light goes ping. And then the shopper's only concern is whether or not the lamps will survive the jostle home.

Just lately, however, these empty-headed but brilliant cinderellas have been looked at in a new light. Are we getting value for our money? That's the question.

It's a thought that has occurred to members of a U.S. congressional sub-committee, whose recently-published report says that incandescent lamps burn out too fast. The report states bluntly that the major manufacturers could make lamps

that last longer and adds that the U.S. government is saving itself \$2 million a year by using special lamps. It also says that consumers are being misled by comparisons and measurements which have no relationship to lamp life.

These are hard words and make a closer look at the whole business of lamps, light and longer life seem warranted

Ninety-five per cent of the Canadian market is handled by the big three — Canadian General Electric, Sylvania and Westinghouse. Only two companies actually manufacture in Ontario, CGE and a small independent producer, the London-based Service Lamp Company.

Competition is fast and furious. If one company makes a breakthrough there's little the others can't duplicate in super-quick time. The big three turn out thousands of varieties of lamps, but the bulk of their \$15 million household sales each year is

accounted for by the ordinary househol with a rated life of 750 or 1,000 hours.

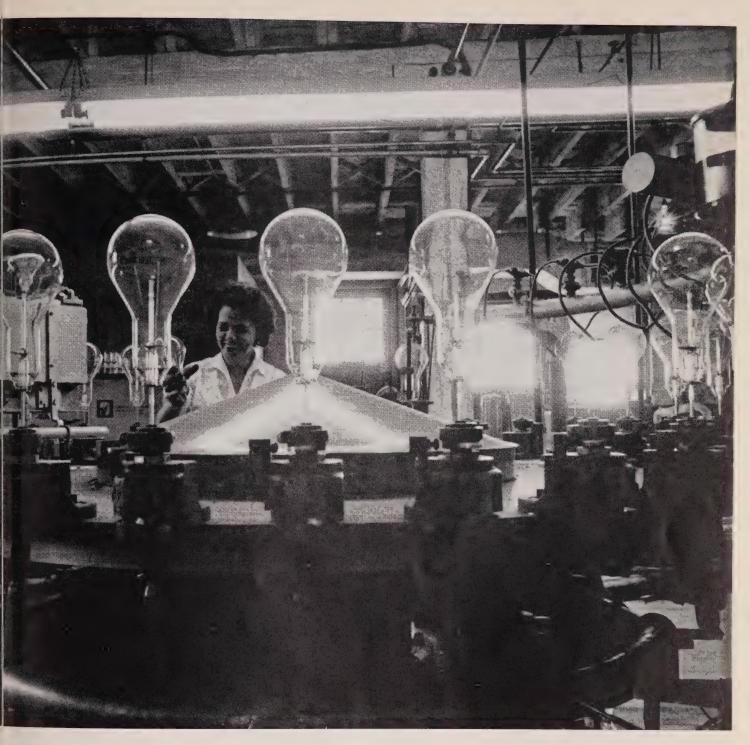
Which is where the controversy begins.

Some people think this is too short. lamp makers disagree. Prolonged life reduced light output for the same ample power and most manufacturers have or light output rather than longevity.

It is possible to construct a lamp that for tents and purposes will last for ever. If glimmer would hardly light a glow worm

Says Dana Harland, manufacturing mare Service Lamp: "You can't have your cake it. Extend the life of a lamp and you cut is output; increase the light output and you of the life. Our problem is to find the econom that will give the customer a reasonable it.

Service's bread and butter 1,000-hour in slightly different to the standard one mad y



tee, having a single tungsten coil instead of a coil filament (a coiled coil is just that: a coil into a coil. It emits more light but is less than a single coil). Service specialize also 500-hour bulb.

fourse, the other lamp companies also turn ist quantities of longer-life lamps and the is deciding where and how to use them, an always get increased light output and ity by installing higher wattage long-life But then the power bill goes up.

to a CGE spokesman: "During its lifetime a hour electric lamp uses seven times its cost stric current. So the important thing to worry its saving current, not the price of the lamp." stry faces an entirely different problem to useholder in the matter of lamp selection. In the saving goes, osts money. It may take half an hour, for

example, to replace the lamps in a single exit sign.

At home it's another story, unless you rate a few minutes of your spare time very highly indeed. But long-life lamps are still invaluable for those inaccessible spots such as hallways where you have to wobble around on a stepladder to reach the fixture. And again, it all depends on how much light you're prepared to sacrifice.

"To all practical purposes the cost of buying and installing a domestic light bulb is negligible and a person would be foolish to reduce the light output from a reading or study lamp," says an Ontario Hydro illumination engineer.

There are other aspects to lamp life and these are influences beyond the control of the manufacturer, who tests his lamps under laboratory conditions free from vibration and fluctuations in voltage.

Normal household lamps are so delicate it's a

wonder they take the knocks they do. They've come a long way since the "red hot hairpins in a glass bottle" of Edison's day. Stretch out that tungsten coil and you'll find the wire is well over a foot in length and thinner than a human hair. At white heat it is particularly vulnerable to vibration, while deviation either way from its rated voltage—such system fluctuations are unavoidable in some areas — will affect its life.

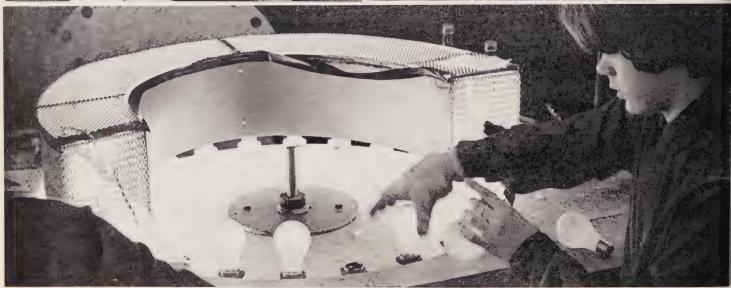
For this reason a 125-volt lamp plugged into a 120-volt circuit will last nearly twice as long as its 120-volt counterpart. The catch is that the light output is reduced approximately thirteen per cent.

Why does an incandescent lamp burn out in the first place? In spite of operating in either a vacuum or an inert nitrogen-argon mixture, the tungsten filament gradually burns away. This accounts for the black deposit on the inside of the bulb, in-

light or longevity?







dicating that it is near the end of its life. This deposit also reduces light output. To make a longer-life lamp, the manufacturer simply uses a thicker filament which takes that much longer to evaporate

Incidentally, don't fall for the tale that you can save money by burning a light bulb continuously rather than switching it on and off. It's a fallacy. After all, a 750-hour lamp burned continuously will last little more than a month.

What control is there over the manufacture of lamps? Well guidelines are laid down by the International Electrotechnical Commission in Geneva. All lamp makers of any repute observe these guidelines while an IEC sub-committee operates in each of the member countries.

The Canadian Standards Association keeps a close eye on lamp performance ensuring that such factors as base temperature and wattage remain

within limits and, at this moment, standa under revision. Ontario Hydro subjects makes of lamps to stringent tests for its ov poses — the Commission's lamp bill amount something like \$200,000 a year.

Lamp-making today is essentially an as industry. Most manufacturers find it cherbuy their bulbs, lead wires, bases and imaterial from outside sources. The industry of the most automated and the manufacture proud of the way they have slashed price the years.

Back in the thirties, people were paying to more for their lamps. Today, in spite of in you can pick up a 100-watt lamp from the market for around 28 cents.

Any way you look at it, the modern incan is lamp is a bargain. But it's the shopper's clothe matter of light output or longavity.

While largely an assembly operation, the manufacture of light bulbs calls for definess and dexterity. Such skills make the employment of female labor important from the practical as well as the aesthetic point of view.



jional managers change



I. Carl Ingimundson



J. Walter Looney



Glevel changes involving three Ontario Hydro regions were junced recently by Omer S. Russell, executive manager—

Jam W. Smith, Central Region manager since 1954, will June 1 after more than 43 years of valued and dedicated be to Hydro. He is a member of the Engineering Institute of da, the Electric Club of Toronto, the Association of Profestal Engineers of Ontario, the London Club and the University of Toronto. Born in London, Ontario, Mr. Smith graduated McGill University in 1923 and joined Hydro the following the will be succeeded by Frank J. Dobson, at present typer of Georgian Bay Region.

Dobson joined Hydro in 1942 after graduating from the strictly of Toronto. He has served on various generating

station construction sites including DeCew Falls, Chenaux, Sir Adam Beck No. 2 and Lakeview. From 1961 until 1966 he was on loan as chief executive of the Volta River Authority in Ghana. He was appointed Georgian Bay Region manager last December.

I. Carl Ingimundson, now manager of Northwestern Region, will succeed Mr. Dobson as manager of Georgian Bay Region. Mr. Ingimundson has been in his present position since 1962. A graduate in electrical engineering from the University of Manitoba, he joined Hydro in 1950 as executive assistant to the director of the Frequency Standardization Division and subsequently became executive assistant to the general manager and East Central Region manager. He is a member of the Association of Professional Engineers of Ontario, Port Arthur Rotary Club and Port Arthur Golf and Country Club.

J. Walter Looney, operations engineer in Northwestern Region, will become the region's manager. Most of Mr. Looney's 37-year Hydro career has been spent in the Northwest. He began as meter engineer in the Thunder Bay system and has since served as district superintendent in the St. Joseph, Rat Rapids, and Patricia districts and as superintendent of Chats Falls and Cameron Falls generating stations and of the Thunder Bay system. He was appointed to his present post in 1948.

East meets West

Coast-to-coast power is now a reality. The Atlantic-to-Pacific network — with a capacity of nearly 245 million kilowatts and 265,000 miles of transmission line — was tied together last month by a 215-mile, 230,000-volt line from Yellow Tail to Glendive, Montana.

Only the two Canadian provinces of British Columbia and Ontario are linked into the grid — B.C. through the Northwest Power Pool, and Ontario through the participation of Hydro's east system in the Canada-U.S. Eastern interconnected group. Comprising 205 major producers of electricity, the power grid is by far the largest in the world and represents 40 per cent of the world's total electrical capacity.

Research . . . oui!

Hydro-Quebec has been authorized by the Quebec government to establish a \$28 million research institute at Boucherville, southwest of Montreal.

The institute, to be in operation by 1972, will have an initial staff of 200 researchers and technicians. About \$13 million will be spent on buildings for the 1½-square-mile site. Much of the remaining \$15 million will go on equipment.

Studies will be conducted in seven branches of electrical engineering and will include seven distinct laboratories: high voltage, high power, low voltage, control and automation, applied mathematics, electro-chemistry, and mechanics and thermodynamics. Many of these areas have come under study at Ontario Hydro's research centre in Etobicoke.

Premier Daniel Johnson, who made the announcement, said the main function of the electro-chemistry laboratory will be to study fuel cell concepts. He said fuel cells promise to be one of the most financially rewarding aspects of the institute.

Seventeenth-century powerhouse

Nova Scotia Light and Power Company has under construction what must be one of the country's most unusual Centennial projects. They've delved back into the 17th century for inspiration, coming up with a structure designed along the lines of the first grist mill built in North America. The only difference: it will house a modern 15,000-horsepower hydro-electric plant.

The \$2.5 million generating station is set near where the French explorer Poutrincourt established his mill in 1607. It will have an ornamental water wheel, a roof of hand-split cedar shingles and



Inside, it's a different story.

walls of old brick similar to that made in Nova Scotia 300 years ago. To preserve the original look of the site at Lequille, Annapolis County, both the penstock bringing water to the turbine and the tailrace running from the station will be hidden underground.

Land around the new station will be landscaped and will include a number of historic artifacts. Completion is scheduled for early next year.

Lots of light

A New Jersey firm claims to have made the world's two most powerful and costly light bulbs. One, a 20,000-watt xenon bulb valued at \$3,500, was designed to simulate solar light in space training. Used in military searchlights, it can cast a beam 50 miles. The other is an 85-inch mercury vapor lamp valued at \$12,000. With a 100,000-watt rating, it is considered the most powerful man-made light source.

A store of knowledge



She's the champ for 1967.

It isn't often mother-in-law gets the credit, but Mrs. D. G. Robertson has never regretted that day 34 years ago when her mother-in-law persuaded her to become Ospringe correspondent for the family-owned Acton Free Press. And now Mrs. Robertson has won Ontario Hydro's annual award to the champion weekly newspaper country correspondent.

Mrs. Robertson also writes for the Erin Advocate and con-

tributes a weekly column to the Guelph Daily Mercury. Sideally placed for picking up local news — she and her hus operate a general store in Ospringe. She is seen receiving award from Hydro Director of Public Relations James A at the Toronto convention of the Ontario Weekly Newspassociations.

McLuhan unlimited

Adherents of Marshall McLuhan, the prominent commun will probably already know that we've been wrenched out Neolithic Age by nothing more or less than the electric of But for those who find this a revelation, hold on to you while we submit you to a veritable barrage of McLuhanism

"We have, in the Electric Age, come suddenly to the end Neolithic Age. After a good many thousands of years of spized habits and technology and fragmentary tool-making discovered the electric circuit. It is the circuit that has ended Neolithic Age. The Neolithic Age, just like its ultimate phase factory age in the nineteenth century, was dedicated to specifragmentation and extensions of this or that limb of man circuitry we have, instead of extensions of hand, or foot, or or arm, a kind of involvement of the whole nervous system extension of the nervous system itself, a most profound volving operation. . . ."

Still with us? The point is — we're evolving better electr

municipal briefs

Safety seminars covering such subjects as underground hat falls from poles, communications and the reporting and investion of accidents are currently underway across the propertical equipment will be on show at each meeting. Loc and dates of the Electrical Utilities Safety Association ser are as follows: March 6 and 7, Toronto; March 13 ar London; March 16 and 17, Windsor; April 11 and 12, \$Falls; April 18, Sudbury; April 20, Sault Ste. Marie; Ap Port Arthur.

J. Larry Tron has been named manager of newly-formed broke Hydro, which became a cost-contract customer of C Hydro, March 10. Pembroke has been supplied by the Pen Electric Light Company since 1884, and will continue to r some power from this source. Mr. Tron has been with the pany for a number of years.

London PUC dispatched three linemen and a bucket trihelp Windsor repair power lines damaged in a recent snow Arrangements were made by Ward Stiles, operations er for Ontario Hydro's Western Region and regional Emel Measures Organization co-ordinator for electric power.

Harrow Hydro is urging its commercial and domestic cus to floodlight their buildings, homes and gardens for Cal Centennial. Manager John A. Middel says the campaign is publicized by letters and advertisements. It is still too equidge the public's reaction.

Smiths Falls Hydro is celebrating its golden anniversely year. Its chairman is Dr. W. O. Murphy, whose father was the original commissioners in 1917.

Picton PUC plans to brighten up the town this Centennia by transferring fluorescent lights on Main Street to other local and installing mercury vapor lamps in their place. Also cards: a huge Canadian flag in lights to complement profile floodlighting of the municipally-owned armory.

Casselman Hydro has acquired land for an office building of to construct next year. The land, at the corner of St. Eul

St. Isidore Streets, already has a concrete block building h will be used as a workshop and storage area.

h Bay, Widdifield and West Ferris Hydro are sponsoring a column in the North Bay Nugget called "Your Hydro er." It provides weather news and a question-and-answer ce about Hydro matters.

bers garbage 388 to 361, and water 388 to 289. These facts reported by Manager E. Dent at a recent trustees' meeting.

Nicholson and C. M. Simpson were elected chairman treasurer respectively.

ford PUC has put on a bold new front, facing its office with shable and colorful material and adding a new electric sign lood measure. The utility recently acquired its own 5,000 sub-station to bolster electrical service.

npower development

AMEU's Operations Board has called for the establishment Manpower Development Committee to be charged with responsibility of co-ordinating all matters related to staffing at the local utility level.

oming association president A. Gordon Stacey told the 58th al meeting that studies undertaken by a special committee p by retiring president E. F. Burbank revealed there is an indicate need for training in various fields of utility operation. It committee's findings indicated "quantitative and qualitatraining requirements were a "must" in five specific areas—vision trades (overhead and underground), customer relapublic relations, general office and clerical work.

committee recommended the proposed manpower dement group's training program be the responsibility of the U. It further called for power for the proposed body to lish appropriate subcommittees to develop the necessary ous.

Departions Board's recommendation read in part:

fat in view of the urgency apparent from surveys, we recoman immediate training program for both overhead and arground trades and for the personnel of the local Hydro are engaged in supervisory activities, and

the appropriate personnel of Ontario Hydro and the Elec-Utilities Safety Association or any other source, and

t in establishing the proposed Manpower Development nittee, that committee be made responsible for co-ordinatimatters related to staff training in a local Hydro system."

company target

cells are never far from the headlines these days. Now the ecticut branch of Pratt and Whitney Aircraft announce a scale research program to develop a marketable fuel-cell r plant operating on natural gas. Named TARGET (for to Advance Research for Gas Energy Transformation), the sam is aimed at providing on-site electricity for homes, ments and businesses. Twenty-three gas companies and this are behind the \$20 million venture.

o honored

Delcol, Windsor Utilities Commission welder, says it took year to forget the smell of a burning house from which he cold two adults and three children. He and Jerry Van Mackel-Gwere on their way to a job when they spotted smoke billow-rom the house. Climbing through a window, Mr. Delcold the three youngsters to safety and then returned to lead he adults. Here he displays the awards he received for the cold had been should be adults. Here he displays the awards he received for the cold had been should be adults.



He can still smell the smoke.

heroism, at his elbow is the International Brotherhood of Electrical Workers plaque for life-saving. He also received a citation from the Ontario government.

Totem pole at last

A conifer that missed being turned into a totem pole by the BC Indians has ended up a totem pole anyway — carved by students of North Agincourt Public School into designs suggesting the birds and gods of Indian lore. Between the forests and the classroom, however, the tree also put in years of faithful service as a hydro pole. Vice-principal Ross Hicks approached Scarborough PUC last September for the old 21-foot length of timber. On completion as a totem pole it will be erected in front of the school.

A 50-50-50 proposition

Long service took on extra meaning at the recent banquet of Toronto Hydro's Quarter Century Club. Aside from the six who joined the club as fledgling 25-year veterans and the nine who



Three of a kind wins a handshake.

received their 40-year pins, three retired men, each with more than 50 years of service, were given gold watches.

Presenting the watches, Toronto Hydro Chairman John McMechan said it was long-service employees like the 275 who attended the King Edward Hotel dinner that had made Toronto Hydro one of the most respected municipal utilities in Canada. In the picture, General Manager Harry Hyde, who received his 40-year pin, congratulates Bert Gibbs, Norm Fisher and Mac White, the 50-year employees.

He gets the drift



Something borrowed, something blue.

Jim Freeman, Lucan Hydro manager, has put a new bounce into meter reading. Struggling through hip-deep snowdrifts to get to meters is a thing of the past — so long as he stays in the good books of his chairman. Now he glides over the top and right up to the meter on a snowmobile.

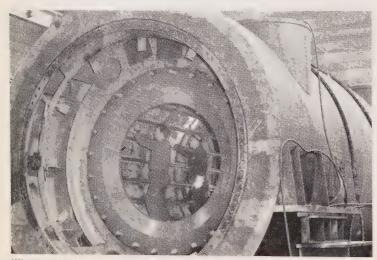
It seems that every time meters have to be read in the snow belt village, Old Man Weather obliges with an extra dose of the fluffy stuff. By borrowing the snowmobile from Commission Chairman Alan Scott, Mr. Freeman is able to cut a day and a half off his usual winter rounds.

According to the manager, there's only one drawback—"the customers all want to go for a ride." One customer told him she felt like stealing it while he was reading her meter.

Full steam ahead

The first of four 500,000-kilowatt generators destined for installation at Lambton generating station on the St. Clair River near Sarnia is taking shape rapidly. The giants are being built by Canadian General Electric at its Peterborough works. They are the largest steam turbine generators the firm has constructed.

When completed, each generator's stator will weigh about 250 tons and will measure 20 feet long and 15 feet in diameter. The



Kilowatts in the making.

rotors, which will travel at 3,600 r.p.m., are being built by General Electric in the United States. The first of the four generators will be delivered this summer. Initial power is expected from the station late next year.

Battery pact

Ford Motor Company has signed an agreement with Y Electric Corp., of New York, to seek new energy source electric automobiles. Yardney, a manufacturer of rechar silver-cadmium and silver-zinc batteries, is now at work or air and nickel-zinc energy sources. These new batteries great promise in providing long life and high-energy densire reasonable cost, says the company.

The electric company will also work with Ford on the so sulphur system mentioned in the February issue of Hydro This system is said to be capable of storing 15 times the of conventional lead-acid batteries.

The mighty atom

Britain is building the world's largest nuclear power station Lancashire coast at Heysham. Plans call for the installate four Advanced Gas Cooled Reactors with a total capaca 2,500,000 kilowatts.

The news emphasizes British confidence in this type of nature of the Investigations by the Central Electricity Generating Board state was ideal for local conditions, providing power cheaper any other system. The station is likely to be 10 per center of the Electricity Generating Board state of the Investigation of the Inve

Electric League on the march

Seven "wise" men are behind much of the policy initiated newly formed Ontario Electric League, reported vice-projohn A. Torrance, Etobicoke, at the 58th annual meeting OMEA-AMEU, in Toronto.

Each heads a committee to advise the board of direct finance; electric heat servicing; training and certification; relations; Triple Seal and Medallion administration; Re and Medallion standards; and electric heating standards

All are extremely knowledgeable in their spheres of oper "These committees have been given a number of im tasks and are diligently at work finding logical and we solutions to the problems at hand," said Mr. Torrance.

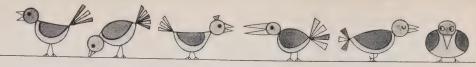
At its annual meeting in February the league, offsprir June wedding between the Electric Service League of and the Electric Heating Association, approved several k relating to the constitution and elected a new board of d with Mr. George Marshall as president. A new certi procedure was also announced covering both new an version electric heating installations, and including wiring, and installation capacity.

"I might point out that the local chapters as created Electric Service League will be continued," said Mr. To "The OEL plans to issue bulletins to the executive of each outlining activities throughout the league as a means of im communication. The directors feel the chapters are esset the success of the league."

January energy production

Primary energy provided by Ontario Hydro in Jan totalled 4.61 billion kilowatt-hours, an increase of 7.4 cent over the same month a year ago. Adjusted seasonal influences, primary energy demand in Jan was 4.14 billion kilowatt-hours, 2.3 per cent less than previous month. The seasonally adjusted total for Jan represents 49.65 billion kilowatt-hours at annual represents 356.93 per cent of the energy demand in 1949.

off the wires



Don Wright

ast columns we have disposed of such conrsial topics as the socio-economic impact of puter technology; the effects of electrohological therapy on the personality and the ges wrought on man by the evolution of ure comforts from the simple pit to the lectric water closet. Due for a respite, we will the most of this month's remarks to the serene placid world of labor relations.

here else does such comradery exist as reen he who labors (on occasion) and he manages (to avoid it)? And just how far this harmony and accord prevail in labor ons?

all, there is general agreement that some labor s doing and that relations of one sort or her are a good thing. Beyond this there are s of mild disagreement.

ominent labor leader James Hoffa, for exe, doesn't quite see eye to eye with his rnment on some minor matters of policy and uthorities, convinced in his case that the pen se more effective than the sword, are limiting eedom of movement temporarily.

d there is the eternal teacher-trusteeayer triangle wherein the teacher may be ded as the hypotenuse since he appears to the sum of the square of the other two in terms of take-home pay and fringe fits.

me are suggesting that children, as a major item, be removed from the educational me. Without children, no buses would be essary, new schools could be restricted to hers' lounges and recreation facilities, books to be done without and there would be a ficant saving in general wear and tear—opt on mother.

seems evident, then, that the odd little stone nars the smooth green pastures of the laboragement field and it is our intention to nine two or three recent and more significant nces of unrest. We are adopting this appear in deference to Mr. Justice Ivan Rand his commission. They are examining the lem in its broader concepts and we have no to steal their thunder.

g labor news usually originates in the induscentres such as Montreal, Toronto and ilton but to the shrewd observer, such as elves, a recent walk-out by project construcworkers in the remote Vancouver Island et of Gold River deserves a second look. e, more than 600 workers stalked off the job gh dudgeon after accusing the company eria of serving soggy French fried potatoes. tall conscience, we have to side with the ers on this one. Two or three limp chips in a ful scarcely warrant disrupting the local omy but there are principles to consider and underhanded practice tends to lead to her. Let go unchecked, the company might pected to water down the vinegar next, or ration the salt. Serious enough in itself, we ect that the move represents the thin edge

of a sinister wedge to foist bi-culturalism on a very English province. Blimey — French fries in British Columbia!

And a serious situation exists in New York where 42 bunnies are hopping mad over union jurisdiction and the right to choose a bargaining agent. Presently represented by the Hotel, Restaurant and Bartenders Union, the girls, logically enough we suppose, want to be Teamsters. We can't see them as locomotive engineers or boiler makers and the presence of a few innocent little bunnies wouldn't do the Teamsters' image any harm.

The bunnies are also wrinkling up their little pink noses at the kind of lettuce being fed them by hutch owners. They claim 68 dollars a week, plus tips, isn't enough to keep the wolf from the door — in a manner of speaking. Take that literally, of course, and the whole bunny business would fall flat on its fat little tail. It's a hare-raising thought and we suggest management loosen up with the carrots. First thing you know a full-fledged bunny with post-graduate training and plenty of operating experience will only be earning as much as a nurse.

All of which brings us, sneakily enough, to the question of nurses' salaries and some feminine comment on the sad state of affairs apropos the female in the labor movement.

At a recent meeting of a Metro welfare committee, East York Reeve True Davidson took understandable umbrage at the fact that truck drivers get higher wages than nurses in Metro homes for the aged. Snapped the fiery reeve: "Men do the bargaining for women employees and they don't care what wages are paid for women."

Her sentiments were echoed by Controller Margaret Campbell, "You can always tell the difference," she observed, "the higher salaries belong to the men and low salaries to the women."

Tut, tut, Mrs. Campbell, remember those school marms. They've been doing very nicely since rejecting all that jazz about the satisfactions of the profession as a substitute for coin of the realm. In fact, in Toronto they've grown tired of talking money and prefer to discuss contract demands in terms of bottles of whisky.

Board of Education Chairman William Ross contends that the taxpayer whose home is assessed at \$5,000 will be out three \$5 bottles of whisky just to meet the built-in increments the teachers will receive this year. Their new demands would mean another six bottles.

Not so say the teachers. They claim the average homeowner would face only a \$25 dollar tax increase — or just enough to buy two bottles of good whisky.

Obviously, then, the teachers are drinking a better brand of whisky than the school board — which tends to bear out the geometric preposition about the triangle expounded earlier. Remember the pathetic old days of the rosy apple? Times change and junior may soon be in trouble if he leaves anything less than a 90-proof flagon of Old Mulberry on the teacher's desk.

While there may be others, these, to our mind,

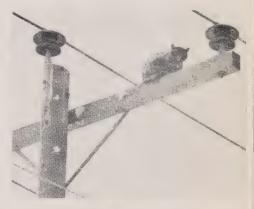
constitute the principal areas of potential labor unrest in the months ahead — to wit: sex, whisky, and French fried potatoes.

■ Oh yes, one other remarkable piece of intelligence has come to our attention — this one from the Niagara Falls Review. It quotes a Hydro engineer who says that under the right conditions, the Niagara river can produce over one million cubic yards of ice in one day. This is enough, the report would have us believe, to chill 15,000,000 drinks.

Any bets on where those Toronto teachers will be holding their next convention — particularly if they get that six-bottle raise?

on a more serious note, the perennial problem of pussy cats and power poles was brought to the fore again recently in a report from Quebec. Hydro there is being sued for over a million dollars on behalf of a youth who was crippled while trying to rescue a cat from a pole.

Just how the utility might be considered liable isn't spelled out but the basic ingredient for this kind of tragedy recurs time and again. As we have stressed on other occasions, animals marooned





on poles will almost invariably come down of their own free will in their own good time. When they don't, rescue should only be attempted by utility personnel.

The drama depicted in these photos was carried out without incident by trained linemen of the London PUC. We think they illustrate how things should be done and why the problem will always be with us so long as there are animals in distress and misguided people with big hearts.





sorry about that, old man...

We couldn't join your birthday celebrations in 1867 because we were 39 years too young. Hydro in Ontario is still in its sizzling sixties but we're making up for the party we missed with Centennial efforts like this. It's the permanent Hydro Hall of Memory at Niagara Falls and it fits the story of public power in Ontario neatly under a single roof. We also have a sizeable stake in Expo and we'd like to see you at both.



ontario hydro news

april/1967
•youth speaks out
•the world of silent sound
•expo unveiled



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Ontario Indicata news april/67

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the cover

By sheer weight of numbers, the Smiths of this world must qualify for more kisses than most. At least that's the sort of argument put forward by young Scott Smith, of Whitby, and it won him first prize in the elementary school section of the Ontario public speaking contest. There's more about the contest on page eight.

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Hey, taxi! It's all in a day's work for this Ontario Hydro lineman star nonchalantly atop a high-voltage transmission tower near Maxwell, : Collingwood. A helicopter is hovering overhead and he's waiting to be up as casually as most people wait for a cab.

Within moments of the photograph being taken, a line was lowered man winched into the machine. Actually, the operation was part of ar ment to air-lift linemen from tower top to tower top, saving them b and a strenuous climb



roads lead to the Universal and International nibition of 1967 and if you miss the turn just ow the signs to Expo '67. They're one and the ne event — the only "first category" exposition authorized in the Americas by the Interional Exhibition Bureau.

w entering the final countdown, Expo '67 is dy to meet the April 28 opening and looks like a ch to provide Canadians with plenty to brag out over the next six months.

ated on two islands and a peninsula only a lar taxi-ride from downtown Montreal, Expo's 00 acres really are another world. Anyone lined to associate it with the kind of fairs and libitions Canadians have known in the past had ter revise his thinking. "Man and his World" he theme and man, what a world it is.

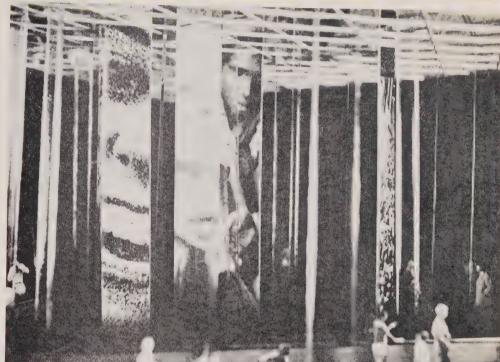
omed to oblivion after October 27 (world ibition rules stipulate that buildings must be a down after the event), there is nothing flimsy emporary about the appearance of the 300 o structures. As Dr. Karl Schwanzer, designer he Austrian pavilion, says: "Expo has the st exciting collection of buildings I have ever in."

o architectural approaches have been adopted. ne of the Asian nations have employed the litional, incorporating the harmonious forms of pagoda into their pavilions. But for the most the 70-odd exhibiting nations have been cessful in their attempts to develop something the building.

Itweight materials such as aluminum, fibreglass prestressed concrete predominate and so inctive is the architecture that a visitor soon as to identify each major structure at a glance, rall harmony has been achieved with a towning approach including strict regulations building-landscaping ratios. A system of als, lagoons and other waterways adds further all unity and contribute to transportation.

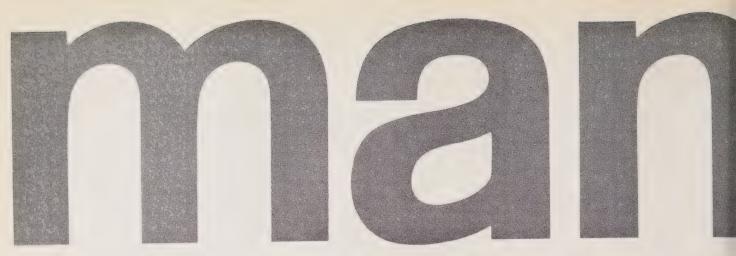
ing around at Expo should be a pleasure if best laid plans of engineer and designer are

he basis of all technology, the Resources lan section leads off the Man the Producer ne. It makes use of the most advanced o-visual techniques and is located in one too is more avant garde buildings. The con is sponsored by Ontario and Quebec os.





what a show



the world is a thousand acres

The United States, West Germany and Ontario are featured respectively by a 185foot high bubble dome, a steel mesh pavilion supported by a number of masts and another tent-like structure made of plastic sheets, Various levels within the U.S. dome will be connected by escalators, elevators and stairways. borne out in practice. They've relied on electricity for motive power and visitors can speed to the grounds from Montreal's new subway by Expo Express. Billed as the world's first fully-automated passenger system, it can handle up to 60,000 passengers an hour on its eight electric trains operating at surface level.

On the site itself, over six miles of miniature railway will whisk visitors on elevated tracks around, between and even through some of the buildings. The minirall consists of 56 electrically-driven trains with a total of 672 canopied cars. The more leisurely inclined may prefer to view the goings-on from the water in a gondola, sampan or Chinese junk.

The future is very much in the present at Expo and electricity is the natural choice to make the wheels go round. Even the street lighting is unique and both internal and external display lighting will contribute extensively to Expo's aesthetics. Audio-visual techniques, animated displays and industrial processing demonstrations will all depend on electricity.

Ontario visitors will take particular pride in t Resources for Man section of Man the Prod pavilion. It's sponsored jointly by Canada's t largest utilities, Ontario Hydro and Hydro-Q but don't expect to find the conventional mo of big generating stations or collections of his electrical equipment.

Instead, the two sponsors are identified only their names and corporate symbols at two or three locations. In keeping with the overall lapproach, Resources for Man has a wide a generous theme depicting man's achieveme obtaining energy from the sun, fuels, the tide and from the nucleus of the atom.

A massive, soaring structure of an advance geometric design, Man the Producer pavilio located opposite the mass transit station on Notre-Dame, largest of the two Expo islands on four distinct levels, it offers a scientific ad ture in three related parts.

Entering the pavilion, visitors will be guide to the Hydro-sponsored, multi-level Resour for Man section, which deals with energy a basis of all technology. Striking theatre and







tion techniques are used together with ory scale working models. A circular cinema. reens completely surrounding the spectator. rtray the many forms of energy that exist re: falling water, moving air, light radiation, cal and nuclear reaction, combustion h expanding gas and thermo-electric devices.

nergy converters such as fuel cells are in a laboratory where direct electrical is measured to illustrate the potential of evices. The increasing importance of energy correlation with man's standard of living nderlying theme of this section.

next move on to the "Progress" section pavilion. Here, an impression of abundance ed by a large variety of industrial and conproducts moving on conveyor belts in boxes to stress the capabilities of the ter-controlled machine tools in operation nout the area.

In a joint Czech-United States-Canadian exhibit, a robot supplies work pieces to, and initiates the operations for, an automatic capstan lathe; orients the pieces for a succession of operations and finally removes the finished pieces. A milling machine is employed which can faithfully reproduce any shape that man's ingenuity can state in mathematical terms.

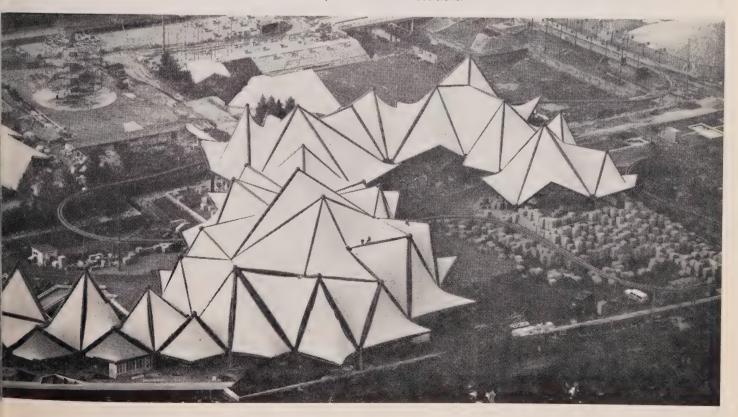
Another spectacular exhibit in this section is a 60-foot-high model of an automated factory which actually produces TV receivers and movie projectors on two production lines. As a parting shot, a series of pictures with questions as captions leaves the visitor to decide for himself whether modern technology is worthwhile.

"Man in Control" is the third sub-theme. Having established the resources at his command and the progress he has made in harnessing them, Man the Producer finally considers the all-important element of control. It goes on to establish how man is creating the means for more efficient observation, analysis, action and information processing, leaving himself free to concentrate on the single element of control only he can handle — decisions

A film traces the acceleration in communications by dramatizing the news-spreading facilities as they were pressed into action at the murders of Caesar and Lincoln, the Titanic disaster and the assassination of John F. Kennedy. Communications satellites and the virtually simultaneous printout of newspapers in Australia, Hong-Kong, Switzerland, Paris and London demonstrate the speed being attained in modern communications.

A fascinating demonstration of air traffic control. one of the few areas where man has achieved universal agreement, illustrates through audiovisual methods man's role as decision maker which the computer enables him to assume. Intriguing "pop-art" murals ask the visitor whether or not control facilities as they exist might not be applied to the distribution of the world's goods to narrow the disparity of living standards and lessen the threat of war.

Many of the nations participating in Expo have supplied exhibits for this pavilion. It is a unique example of international co-operation in an effort to portray the application of science and tech-









nology in the service of man without the encumbrances of commercialism or narrow nationalism.

Ontario people are also likely to hold their head just a little bit higher after a visit to their own pavilion on the same island. Beneath its startling roofline, the Ontario pavilion captures the mood and character of the province in a highly imagir tive setting. Sixteen exhibits range from an amusing portrayal of Ontario on canvas by child to larger than life-size robots who discuss job and industrial opportunities.

History is not neglected and the predominant to of electric power in the province's development has been acknowledged. Many Ontario visitors recognize the colorful motor coach prominently displayed in one section as the "circus" employ by Sir Adam Beck around 1912 to demonstrate the wonders of electricity to the rural areas of the province.

Hydro is also providing the spectacular lighting system which enhances the displays and highlig the striking architectural and landscaping featur of the site and building. It's involved, too, in telling the story of nuclear power in the provin and an automated model of the Pickering geneing station is sure to arrest attention.

Focal point of the Ontario pavilion is a 570-sea theatre where a revolutionary, 70 mm film will b shown on a 66-foot screen. The film, just 12 minutes long, took two years to prepare and is colorful interpretation of the sights and sounds of Ontario.

Gourmets may be expected to make the Ontari pavilion a favourite gathering place. With five distinctive dining areas capable of seating a tota 700 persons, the pavilion will offer a wide variet Canadian cuisine at prices to suit every pocket-back.

Many thought it couldn't be done. Off to a hesi start, with scoffers outvoicing enthusiasts three sneers to one cheer, Expo exponents persever to prove that the majority can be wrong. And as wraps come off the piece de resistance of Canada's 100th birthday party, even the peop who baked the cake are surprised and delighted

Habitat 67 represents a radical new concept is urban dwelling. It consists of 354 modular construction units making up 158 dwellings arranged so that the roofs at one level provide garden space for the level above. Architects has field day at Expo and the result is an exciting showcase of contemporary shapes and design



The Hydro Hall of Memory is appropriately located on the Niagara River in the old Sir Adam Beck generating station, in its heyday the world's largest hydro-electric development.

the trail blazers

Which Canadian patented an incandescent lamp several years before Edison? In which Canadian city did the world's first electric train operate?

Answers to these and other intriguing questions can be found in the newly opened Hydro Hall of Memory, which tells the stirring tale of Ontario's fight for public power and the subsequent development of the province's electrical network.

It couldn't be better located. The Hall of Memory occupies the mezzanine area of the old Sir Adam

Beck-Niagara power station at Queenston, in its heyday the world's largest hydro-electric development. This fascinating glimpse into the past was undertaken as a joint Centennial project by the province's 350-odd municipal Hydro systems and Ontario Hydro.

While taken from the pages of the past, displays are illuminated and enhanced by all that is modern in lighting techniques. Walls are lined with plaques bearing the names of presidents and secretaries of the Ontario Municipal Electric Association over the years and the Association of Municipal Electrical Utilities. Also honored are the men who have served and are serving as chairmen, commissioners and chief executive officers of Ontario

The first thing a visitor sees after mounting the stairs from the plaque area is a large illuminated map of Ontario. This illustrates the growth of the Hydro system from 1910 and lights up to show the decade-by-decade expansion of the system.

Hydro Centennial project evokes powerful memories





Ontario Hydro Chairman George E. Gathercole speaks at the official opening. Guests later saw displays depicting the role played by individuals in bringing public power to Ontario, items of interest including the personal effects of Ontario Hydro's first chairman, Sir Adam Beck, and a lighted wall map depicting the growth of the Hydro system.

There's a light for every municipality. Near the map is a large bust of Sir Adam Beck, first chairman of Ontario Hydro.

Next the visitor enters a large room containing a sequence of panels, the first of which goes back one hundred years to the time the Fathers of Confederation were working out the details of the constitution by the light of gas jets and oil lamps.

From here, the story moves panel-by-panel to give recognition to those who, in the 1870s and 1880s, helped lay the foundation for the generation and distribution of electricity.

There is, for example, Henry Woodward, a Toronto medical student who patented an incandescent lamp in Canada in 1874. And there is J. J. Wright, who helped build and operate the world's first electric railway at the CNE in the early 1880s.

That period also saw the development of an electric oven. Its inventor, Thomas Ahearn, used it to cook dinner for 75 guests at an Ottawa hotel. Other events depicted include the first longdistance transmission of electric power from

Niagara Falls, the development of the power movement in Ontario, the historic m in Berlin (now Kitchener) and the emergsuch Hydro pioneers as Detweiler, Snider an

Another panel shows the famous ma Queen's Park on April 11, 1906, when delegates representing 70 municipalities ass in Toronto to demand government opera hydro-electric distribution. These and mar events come to life in the lower part of the zanine area, where the main story cultriumphantly in the official opening of the Adam Beck-Niagara station.

Also on the lower mezzanine is an illu and animated model depicting the gradua formation of Ontario from a largely agr region to an industrial economy as the system spread throughout the province.

The upper mezzanine area contains artife other items related to the story told in the room. These include lighting equipment, a of electric motors, a model illustrating the (





use of electricity in an early Ontario home, splay about the life and times of Sir Adam lany of the articles featured here were ted by the Hydro municipalities. The upper so brings the story of public power up to m 1921.

ies of the municipal utilities are gradually cumulated and will be placed in permanent at the Hall of Memory for reference s. These histories trace the origin and nent of electricity in the individual municieflecting the important contribution made cal Hydro systems.

raps came off this \$100,000 permanent n on February 25 before an enthusiastic government and utility representatives.

opening, Ontario Hydro Chairman George srcole said that the project "records the of our electric power system and pays the men whose vision and initiative were ole for the Hydro enterprise as we know

He added: "In the Hall of Memory are depicted many of the giants who shaped the public power movement in Ontario — some who spoke as individuals, others who fought for the cause as representatives of municipal councils and trade manufacturing associations."

Other speakers included Ontario Provincial Secretary Robert Welch, deputizing for Prime Minister John Robarts, who was indisposed, and Dr. J. E. Wilson and E. F. Burbank, outgoing presidents of the OMEA and AMEU, which are the co-sponsors of the Hall of Memory with Ontario Hydro. Mr. Welch said that Ontario owed much to the pioneers of the public power movement. "But then," he added, "they were unique men. And here, I think, is something significant and a monument to their vision."

Both Dr. Wilson and Mr. Burbank traced the origins of their organizations back to the early power unions formed at the turn of the century to support the public power movement. And each referred to the Hall of Memory as another example

of the co-operation that has existed from the beginning between the OMEA, the AMEU and Ontario Hydro.

"I would stress," said Dr. Wilson, "that the need for unity is as great today as it was in the early days of our system."

Mr. Burbank, in addition to paying tribute to the pioneers of the Hydro system, said that the Hall of Memory was a salute to the engineers and administrators who had made their contribution.

"All of us know that 1967 is not a stopping point," he said. "We hardly have time for reflection. We must look ahead."

The Hall of Memory is now open and will be seen by the many thousands of visitors who tour Ontario Hydro's Niagara River installations each

It stands as a permanent memorial to the past. But it also serves as a reminder that those who have inherited the responsibility of providing power dare not relax their efforts. Not for an instant.

the odds favored smith



Thirteen-year-old Scott Smith of Whitby has something in common with more than one per cent of the nation's population — his last name. And he cashed in on the situation.

In outlining the problem of having a surname like Smith, the short, blue-eyed grade 8 pupil at Colborne Street Public School topped the cream of Ontario's elementary school orators in the provincial public speaking contest finals in Toronto. The son of Mr. and Mrs. Leighton Smith, Scott went home laden with two trophies, a complete set of the Book of Knowledge, a scroll of merit and \$75 for his bank account.

The lad, whose main ambition right now is to go to university, asked a standing-room-only audience: "Who is that man, and what is his name, who has fought the most battles, made the most speeches, preached the most sermons, held the most offices, sung the most songs, written the most poems, courted the most women . . .?

"History says, I say, and everybody says ---

Humor was the key to success in the elementary school section. First runner-up, Anna Bohdanowicz, a 13-year-old from Downsview, talked about her English mother's vain attempts to master the ski-tow. And second runner-up Mary Balka, an 11-year-old from Kenora, vividly outlined the exploits - and often sad ending of her many pets. But it was tough talk that decided the winners in the secondary school sections.

Prepared speech winner John Porter, 16-yearold son of an Oshawa United Church clergyman, called for withdrawal of US troops from Vietnam and for the admission of Communist China into the United Nations. This grade 11 student at Whitby's Anderson Collegiate and Vocational Institute further urged UN supervision of world disarmament to achieve peace. John was awarded two trophies, a Centennial set of Encyclopedia Canadiana, a scroll of merit and returned home \$100 richer.

Labelling the Vietnam war "legalized murder," Tom Nowak, an 18-year-old student at Scarborough's David and Mary Thomson Collegiate, topped the 14 finalists in the impromptu speech section. He was awarded two shields, encyclopedia, a scroll of merit and \$100.

Second in the prepared speech section was Howard Craven, son of Jerry Craven, editor of the

Ridgetown Dominion. Howard won \$75, a si trophy and scroll of merit for his "Youth Lool at Canada." Third was Nancy Hermiston, of Warkworth, who took home a small trophy, of merit and \$50 for her "Love Thy Neighbor lesson. This was Nancy's second appearant the finals - last year she was also a runner the prepared speech class.

Frank Greenway, a 17-year-old student at Upper Canada College, came second in the impromptu section, followed by 15-year-old Stratton from London's Oakridge High Scho Runners-up prizes in the impromptu class w small shields, scrolls of merit and \$75 and \$5 respectively.

Second and third place winners in the elementary schools section received \$50 and \$ respectively.

Throughout the school year, more than 300 students take part in the province-wide cor jointly sponsored by Ontario Hydro and the Ontario School Trustees' and Municipal Co lors' Association. Forty-two finalists made 1 trip to Toronto's King Edward Hotel to com for top honors, several of them touring Niag-Falls as guests of Hydro the day after the eve







Formal congratulations by Hydro Chairman George E. Gathercole for Scott Smith, winner of the elementary schools section of the Ontario public speaking contest, were followed by an impromptu kiss from his sister Sandra and smiles from the rest of the Smith family. In the formal picture, runners-up Anna Bohdanowicz and Mary Balka look on. John Porter, of Oshawa, displays the first-place cup he won in the prepared speech category while Tom Nowak holds the shield he took home for his win in the impromptu speech section.

how do we rate electrically

by Dr. R. H. Hay

Price-tagging kilowatt-hours is a bit more complicated than stamping 2 for 35c. on a can of corn.

Dr. Robert H. Hay is a past president of the Ontario Municipal Electric Association and he is chairman of the association's Power Costing Committee which recently conducted a comprehensive study of power costing procedures in the province. He is a commissioner with the Kingston Public Utilities Commission. Dr. Hay gained his doctorate in physics at Columbia University for his work on the measurement of nuclear magnetic moments by the molecular beam method. He heads the Physics Division of Aluminum Laboratories Ltd., Kingston, a subsidiary of the Aluminum Company of Canada.

Round and round they go and where they stop nobody knows because the little whirling dervishes we have in mind come pretty close to perpetual motion. You can see them rotating their stuff on over two million walls throughout the province but the chances are you'll only have the vaguest notion of their function.

We're talking about watt-hour meters, of course, and their job is to tote up the electric energy we use to heat water for a bath, toast the bread, dry our clothes and everything else we do better electrically. That's simple enough but the methods we must employ to ensure equitable price tags on the merchandise our meters monitor is something else again. And the familiar meter seems like a good place to start.

In some ways it's like the grocer's scales or a gasoline pump — only smarter. It keeps tab on kilowatt-hours — a commodity which cannot be seen, smelled or, more significant, stored. Harking back to high school physics, we will recall that a watt is the basic unit of electric power, expressing the rate at which electrical energy is expended. A kilowatt is 1,000 watts and when this is supplied steadily for one hour, we have used a kilowatt-hour of energy.

And since we have our little meters counting the kilowatt-hours, measuring each custom consumption, where's the problem? Why nother everyone from the next-door-neighthe steel mill operator the same uniform proper kilowatt-hour and let it go at that? This where the fair and equitable charging comes the picture tends to grow a smidgen more complicated.

In attempting to set rates which reflect the cost of serving the individual customer, or classification of customers, we bid a reluctabut necessary farewell to absolute uniformiand simplicity.

The fact is, a utility has something more to than kilowatt-hours. That something is ser Customers differ in the way they take their electricity and in the effect they have on the so that charges must reflect the difference. is done by classifying customers as residen commercial or industrial by the use of the "block" rate system, and other refinements

Since residential rates are the simplest, bei based solely on energy consumption, or ki hours, we'll take a look at them first. Even this category there are differences betweer customers which must be recognized.

Officials of the North of Scotland Electricit Board tell the story of a dear old lady in a H village whose monthly consumption was s that the local officers thought her meter m defective. It wasn't, but an interview soon up the mystery. As it turned out, she only s on the lights long enough each evening to her candles!

Should she pay as low a rate as the rising young executive in an all-electric home w boisterous family uses up hot water at a r strain even the generous capacity of a Cas water heater? Obviously not, since it cost much to read her meter as it does his and as much in maintenance, plant and equipr At the same time, she produces far less re

This is overcome with a minimum charge each billing period and a three-block billir structure — a method first proposed in 18! English engineer named Wright. For the fii 50 kilowatt-hours of electric energy used billing period, the customer pays at the rat say, four cents a kilowatt-hour. For the ne hours he pays at two cents per kilowatt-h For all energy over 250 kilowatt-hours, he pay at the rate of one cent per kilowatt-h block is based as closely as possible on recosts of service, reflecting the effect on the power system of customers using these a of power. Although the end rate appears

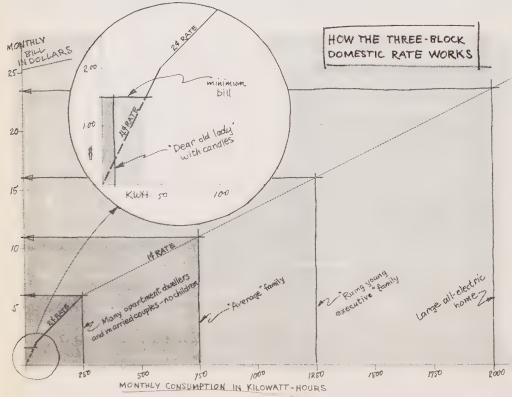


figure 1

ain, it is adequate to recover the small ional cost involved in supplying the bigger

sketch (figure 1) shows how the young utive's bill goes up as he uses electric energy how the minimum charge operates to make dear old ladies" pay a realistic share. Properly gned, with balance and commonsense, the c system is simple, fair and rewarding in that hore you use the less you pay per kilowatt, and equitable since the utility recovers as ely as practical the cost of serving each idual customer.

ever, there are additional "gimmicks" which to destroy the simplicity but do serve certain oses. For example, many municipalities offer at rate" for water heaters on the theory that customers prefer to know exactly how they are paying for this form of service. And make a special low rate available for the kilowatt-hours following the first 250 in inition of the steady, desirable load repred by the high-performance Cascade 40 r heaters. For customers with all-electric es, including heating, an "all-electric" rate en available in which the block system is ced to two blocks for these high-consumption mers, or even eliminated altogether in favor single rate of 1.1 cents per kilowatt-hour l energy used.

the basic principles of a minimum charge he three-block structure apply to the great rity of residential Hydro customers in Ontario, do not necessarily pay the same rate per vatt-hour across the province. Residential omers served by the municipal utilities pay rious rates for a variety of reasons. Not only nere cost differences within the local ms but some municipalities pay more for esale power from Ontario Hydro than rs. The reason for this will be explained later.

dential or "retail" customers served directly nation Hydro, and this includes most farms hamlets, generally pay more than municipal omers — reflecting the higher cost of iding service. Customer density is the key. The number of customers per mile of line e rural areas averages about ten while the parable figure in the municipalities would ably exceed a hundred.

ing realistic price tags to the electrical ce provided commercial and industrial omers is more complicated because a second or — demand — is introduced.

nave already come to grips with the energy or as it applies to residential customers and name principle still applies here. The familiar

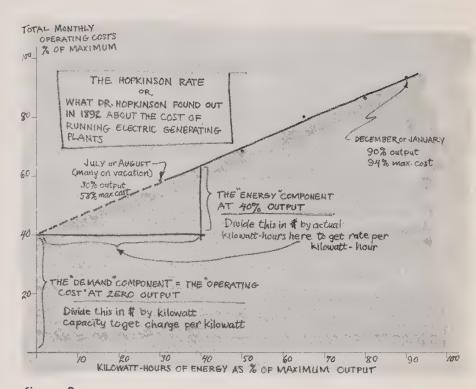


figure 2

watt-hour meter totals up the kilowatt-hours as before and usually a three-block structure is used in determining this energy charge.

But the costs of providing electrical energy to the larger commercial and industrial customers is another story, which goes back to 1892 and Dr. John Hopkinson, an English engineer. He observed (figure 2) that the total operating cost of providing electrical energy from a power plant or system of power plants divided into two parts. One part depended on the amount of energy generated. This he called the energy component.

The other part depended on the peak power capacity of the plant — its ability to meet the total of the demands — of all the customers — this he called the demand component. He therefore proposed that large industrial and commercial customers should pay for the electrical energy they took on this same basis; i.e. at a certain rate per kilowatt of maximum demand and also at another rate for each kilowatt-hour of electrical energy.

Hard to grasp and grossly unfair? It's no on both counts.

The word "demand" in this context pertains to the demand on the supply utility by the customer. In other words, all the necessary lines, transformers and other equipment are, in effect, on standby to supply the customer's maximum requirements. These requirements are recorded on a second demand meter on the customer's premises and he pays for this in the demand section of his bill.

It's like the two neighbors who built identical swimming pools in their backyards. One fellow filled his with the garden hose. It took two weeks but he wasn't in a hurry. His "demand" was low. The other fellow couldn't wait. He got the city fire department to bring a pumper out and fill his pool from the hydrant on the corner which they did in a day. His demand was high and he paid quite a fee to the fire department as well as for the water he used. Likewise, the special demand on the system imposed by the individual large industrial or commercial customer is so great that it must be taken into consideration.

It must be admitted that for the small commercial and industrial customers the use of the demand meter and the addition of a demand component in his bill is a nuisance both to the customer and to the utility.

Therefore, the latest thinking of electrical rate engineers, including those of the Ontario Hydro, is

that these customers should be billed by means of a specially designed rate based on energy alone with suitably designed blocks which will vary in size depending upon the size of the customer's load. In this way this type of rate can be smoothly matched to the more traditional demand-plus-energy rate which must still be used for the large customers of this class. A well-designed rate of this sort, such as Hydro's new General Purpose Rate for small commercial and industrial customers, helps a great deal in improving relations between the public utility and these customers. It also seems to help sell more kilowatt-hours.

And this seems like an appropriate time to slip in another high-sounding but essentially simple principle affecting rates — load factor.

This is the ratio of the number of kilowatt-hours supplied during the year to the number that would have been supplied had the maximum demand been maintained throughout the year. Naturally, if the customer is going to be charged on the basis of his maximum demand periods it behooves him to strive for a high load factor (figure 3) since all those kilowatt-hours between his peaks will only be charged at the energy rate. That's why it

pays to fill in the hollows in the load curve, whether they appear during the 24-hour period or on a seasonal basis.

While additional factors must be taken into consideration when it comes to matching price tags with the real cost of providing electricity to the municipal utilities, energy and demand still form the basis for power costing at this "wholesale" level. In this case, energy is charged at 2.75 mills per kilowatt-hour and every municipality pays at this rate.

Why 2.75 mills? This rate was established at the time Ontario Hydro introduced the present power costing system, January 1, 1966. It is an attempt to relate the price of energy with the cost of its production. The figure generally represents the variation of all operating costs of the generating system with small changes in total output of energy. Of these, fuel is the most important item today since, in general, extra energy must come from thermal plants. The figure will tend to change over a period of years because fuel costs will change as the emphasis switches from water power to coal to uranium.

Those items of operating cost which would remain even if the output of the system were zero — the so-called fixed costs such as interest on capital investment, depreciation and so forth — are recovered by the demand charge.

As with the industrial and commercial custo considered earlier, all costs in supplying powholesale to the municipalities in excess of covered by the energy charges are recouped the demand category.

In other words, Ontario Hydro determines it total costs (figure 4) for generation, high-votransmission, administration, etc., and after ding revenue realized from its energy billing, dithe remaining total among the municipaliti Power District (which we will be meeting long a demand (kilowatt) basis. Since this is uniform procedure applying to all — how discount for the discrepancies in the cost pakilowatt paid by the various Hydro municip

Over the years there has been a continuing movement toward uniform rates and under present procedure, more than 80 per cent cost of producing and supplying power is r pooled province-wide. Only three areas ren which account for the relatively small discrebetween municipalities.

First there is the return on equity and this i one instance where old age is an advantag In recognition of the contributions they hav to the retirement of Ontario Hydro debt ovyears, all municipalities receive an annual r in proportion to the equity each held at the year's end. This is deducted from the cost kilowatt and the older utilities benefit mos they have contributed longer. It has been recommended by the OMEA Power Costi Committee that a better way to give this creating would be in the form of a monthly deductifrom the power bill.

Remember all that frequency standardizati work carried out from 1949 to 1959 in Sout Ontario? Well, it isn't all paid for yet and a uniform charge per kilowatt is still being le against those municipalities which had to changed from 25 cycle to 60 cycle operati Further uniformity in the rates at which th municipalities buy their power will occur a 1975 with the final payment on the frequestandardization account.

Certain charges associated with low volta transmission and transformation account remaining variations in the cost of power municipalities. These take into account the difference in ownership of supply facilitie the municipalities. If municipality A owns distributing station while municipality B d not, there is an additional cost to municip B in its billing.

Finally, we come face to face with the Po District and the principle here is easy eno

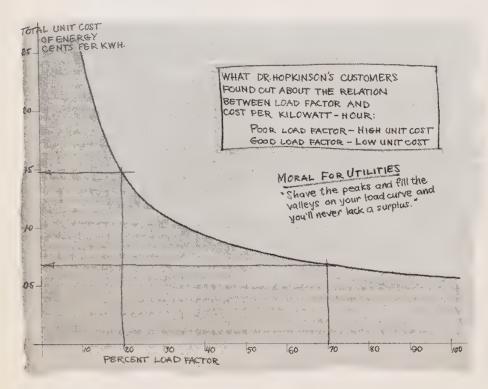


figure 3

p if we can handle the concept of diversity applies to electrical load.

Power District, created in conjunction with new costing procedure, embraces every Hydro omer in the province not served by a icipal utility. These run the gamut from the , the cottage, and the rural school to mines, and paper mills and the massive producers eel and chemicals. Previously, costs were ated directly to these customers as individuals nat they were denied the benefits of diversity created within their group or class. As bers of a single Power District, they may, ct, be regarded as a municipality insofar as the power costing principles apply.

first a word about diversity. Fortunately, the mum demand of every customer does not r at the same hour of the day or the same of the week.

Jones may turn on her stove for dinner at p.m. while her more sophisticated neighbors dinner at eight. Similarly, those big electric ices at the steel mill might shut down arly at 4.00 p.m. — just as the second shift e automotive plant moves into high gear.

use this is a fact of life, Ontario Hydro and tilities need not build generating stations, mission lines or distribution systems of a city to meet all the individual peaks as if they rred at the same time. A study conducted time ago by the Detroit Edison Company ests the significance of diversity. This pany estimated that during a five-year period uld add domestic appliances with a ected load of 1,700,000 kilowatts. But they ated that this would represent only 162,000 atts of new peak generation.

entally, it's largely because so much diversity s within the residential customer classification no demand charge is levied and the rate is d only on their kilowatt-hour consumption.

e diversity is much less significant with big strial users of power, who have fairly nuous operations, the diversity amongst the t industrial customers of Ontario Hydro in ew Power District is estimated at 10 per cent. d a different way, the diversity factor es the total of their peak demands by er cent.

the effects of diversity in the Power District only be estimated a year ago, actual es are now available as the result of studies conducted in conjunction with digital nd meters and data processing equipment. verify the estimate of 10 per cent.

HOW THE "COST-OF-POWER" IS DIVIDED

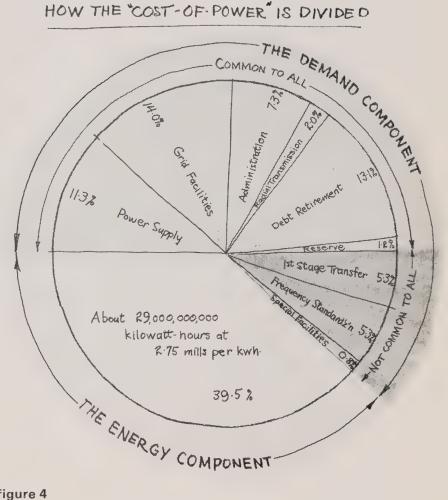
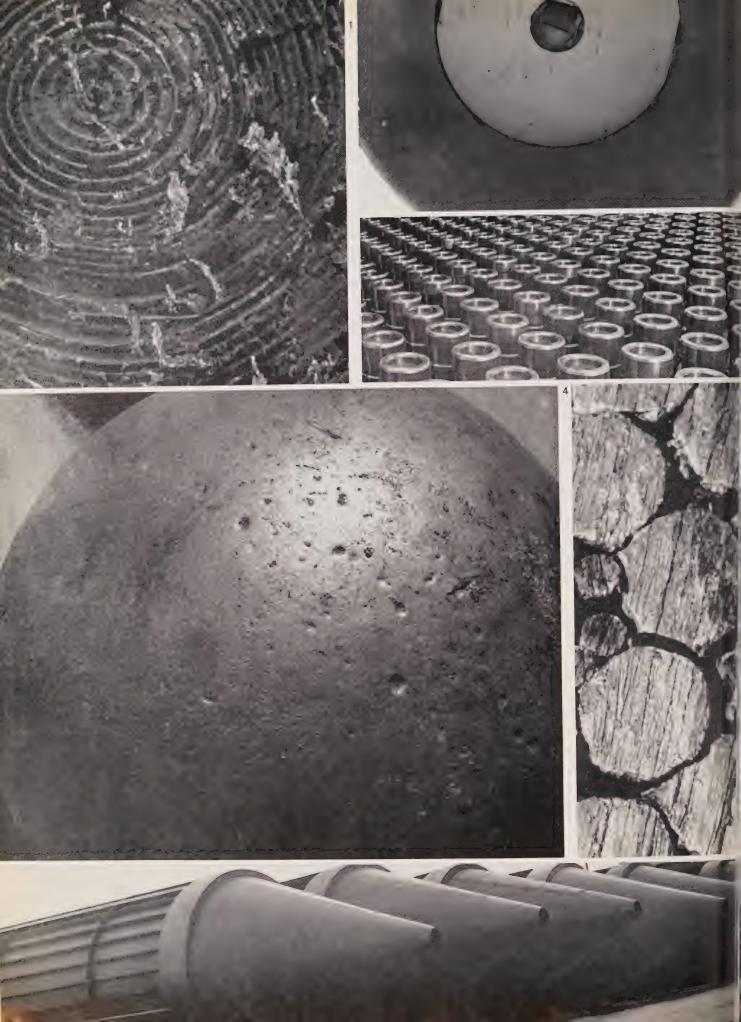


figure 4

Perhaps this cursory glance at the thinking behind the price tags on our kilowatts and kilowatt-hours is enough to suggest that the lot of the rate engineer is not a simple one. Even in a publicly owned system like Hydro, where electricity is sold to the customer at what it costs to produce it, with no allowance for profit, the design of electrical rates is a vital function. Involved are the efficient use of plant, the actual cost of service, promotional requirements and, to some extent, historical and social considerations. The objective is to provide the optimum in uniformity, appeal and efficiency consistent with maintaining the system in sound financial health.

With over 80 per cent of total costs now pooled on a province-wide basis, uniformity has been moving steadily forward at Hydro and the new procedure represents another important step in this direction. Complete uniformity has its advocates but to charge each customer at the same rate per unit is to ignore the real cost of providing service. To assess Tom for part of the price of serving Harry seems to fly in the face of fair business practice. And so long as the unique Hydro family concept is maintained in Ontario, with recognition of municipal equity in the provincial system, absolute uniformity is impossible.

Some will contend that increased emphasis on the energy side of a rate structure tends to decrease the incentive to sell electricity. Bogged down in the philosophy of power costing, they will have lost sight of one simple economic truth. As fixed costs are spread over more kilowatt-hours, the cost per unit is bound to decrease.



whatisit?

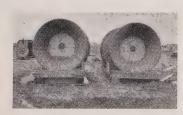
This is a skill-testing exercise for which we're not giving out any prizes. Allow yourself 30 seconds to decide what each photo really is. For another view of the objects in question and the correct identification see below. If you get more than five of them correct consider yourself a member in good standing of the what-is-it club.

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number 1

A dirty fingerprint, or a shaggy artichoke? Neither, it's the end of a sluice stop log at Barrett Chute generating station on the Madawaska River, near Renfrew. Two additional units now being installed at Barrett Chute will add 111,600 kilowatts to the station's capacity. The original station was built in 1942 with two units. The addition will be completed late next year.



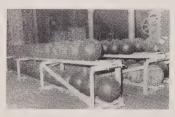
number 2

If you think you can turn this with an ordinary screwdriver, you have another think coming because the slot is close to one inch wide. The object is a cooling water pump for unit five at Lakeview generating station, near Toronto. This unit is scheduled for full service this spring and by 1968 three additional units will be in operation giving the station a total capacity of 2,400,000 kilowatts.



number 3

No, it's not a bottling line. You're looking at the end fittings of fuel rods at Douglas Point nuclear generating station on the east shore of Lake Huron. The reactor was started up last fall and now the 200,000-kilowatt station is feeding power into the provincial grid. Douglas Point is Canada's first full-scale nuclear-electric power plant and cost \$85 million.



number 4

Good for you if you detected traces of coal on this sphere. It is used to pulverize coal to a powder that can be burned in Ontario Hydro's steam generators. Measuring 10½ inches in diameter, the ball and others like it are held between two races, one of which revolves. The coal is crushed as it is forced through the assembly. During their lifetime, the balls will pulverize about 350,000 tons of coal and lose three of those 10½ inches in the process.



number 5

Here's an easy one. You're getting a straight-on look at Hydro's 500,000-volt Extra High Voltage line. The line brings power 430 miles from hydro-electric stations on the James Bay watershed to where it is needed in Southern Ontario.



number 6

Fire one! Fire two! Belying their true identity, these coal silos from Lambton generating station near Sarnia look more like ground-to-air missiles. Once in use, they will stand tapered-end down feeding coal into the weighing and pulverizing equipment before it is burned in suspension. Lambton is expected to produce initial power from its first 500,000-kilowatt unit in 1968. Three other identical units will be brought into service at yearly intervals.



silent Sound

by Les Dobson

We live in a world of sound. Phone bells, the roar of traffic, the scream of jets, the tick of a clock, the cries of children and sonic booms are all part and parcel of existence. And the more civilized we get, the noisier we apparently become.

Yet there's another and more mysterious world of sound, one that belongs more to porpoises and bats than to humans. This is the paradoxically silent world of ultrasonics.

High-frequency sound is capable of detecting flaws in concrete, cutting away cancerous tissue, soldering, brazing and welding, punching holes in metal, drilling holes in teeth, killing marine life and catching burglars. Sound waves will ferret out submarines, detect brain damage and scrub delicate mechanical parts as clean as an ultrasonic whistle.

What exactly do we mean by ultrasonics? Well the term provides the analogy in acoustics for what, in optics, we call ultraviolet radiation. Ultraviolet rays cannot be seen; ultrasonic waves are undetectable to the human ear.

Once sound enters a frequency around 20,000 cycles a second it passes beyond the human audio range. But it will penetrate gases, liquids and solids far easier than the sounds we hear every day.

All this is far from new. Twenty years ago Ontario Hydro engineers pioneered an ultrasonic device that will probe through sixty feet of solid concrete. The device, called a Soniscope, detects

cracks that can develop deep inside a hydro dam. It will also determine the quality of the concrete itself.

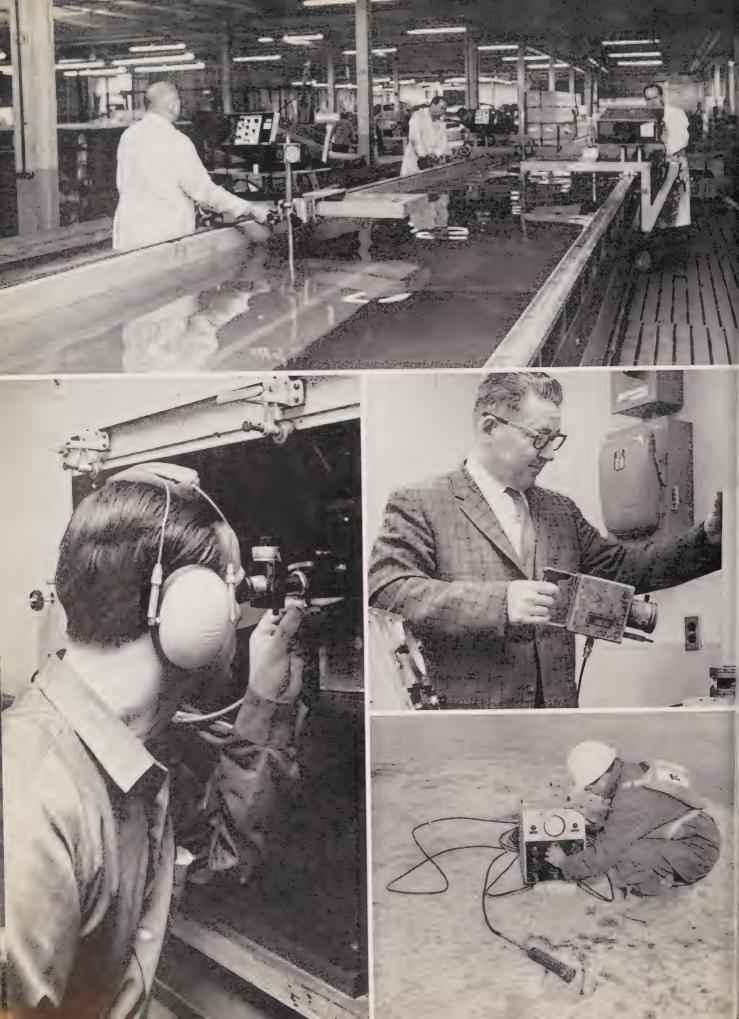
It works this way: an ultrasonic generator, or transducer, is placed against the dam wall and a second transducer laid against an opposite face of the dam. Transducers will turn electrical impulses into sound waves, or vice-versa. So one transducer acts as a transmitter, the other as a receiver.

The time it takes for the silent sound to pass through the dam is pictorially represented by blips on an oscilloscope tube. Sound waves travel through good quality concrete at between 12,000 and 15,000 feet a second. At slower speeds the engineers know the concrete is of lower quality. Cracks are detected on the oscilloscope screen because they attenuate, reflect or divert the sound

The Soniscope is the brainchild of research engineer Jack Leslie, who during the last war worked on methods of detonating sound-triggered mines at sea. It is now used for a wide range of concrete research and testing, both in North America and Europe.

Sound waves can also be harnessed to clean delicate mechanical parts. Ontario Hydro gives its meter dial assemblies a brisk two-minute ultrasonic dip, immersing them in a cleaning fluid throbbing with silent sound. South of the border, the Niagara Mohawk Power Corporation operates

s show that man's friend poise navigates with the dicking noises far above nan audio range.



White-coated team uses ultrasonic flaw-detection equipment on submerged metals that will eventually be used in the DC-9 passenger jet. Ontario Hydro employee, left, wear earmuffs during cavitation experiments while research engineer Jack Leslie demonstrates his Soniscope invention, used to detect flaws in Hydro dams. Hard-hatted technician is seen using the Soniscope on actual location.

milar meter-cleaning installation which is lated to have slashed labor costs by sixty ent.

ultrasonic washdown depends upon a omenon known as cavitation—the creation iquid of minute cavities that exist for micronds before imploding with great violence. rally enough, cavitation is kept to a minimum eaning operations because of its potentially uctive force.

vitation is a recurrent problem in hydroric turbines and high-speed pumps. Says a pengineer: "Metal is literally torn from the is in chunks and in a relatively short time process will reduce a piece of cast steel to the stency of Swiss cheese."

dro is at present studying the effects of cavilon various alloys with the aid of equipment loing audible sound waves. So audible are in fact, that the researchers must wear proe earmuffs.

w detection is one of the most common trial uses of high-frequency sound. Douglas ift of Canada, for instance, which is in full-production of wings and tailplanes for the passenger jet, has a \$50,000 ultrasonic ation at its Malton plant.

r inspectors are kept busy examining alumialloy material for hidden defects prior to ning. Parts are immersed in a large tank of water through which ultrasonic impulses are transmitted to detect hidden defects.

All manner of devices, ranging from loudspeakers to sirens and whistles, have been used to propagate ultrasound. But two of the most common methods rely on the tongue-twisting phenomena of the piezoelectric effect and magnetostriction.

They're not as bad as they sound. Piezoelectric effect refers to the way in which certain crystals change their dimensions when an electric voltage is applied. If the voltage is an oscillating one, the crystal vibrates. The faster the oscillation, the higher the frequency of sound transmitted. Quartz crystals possess this peculiar tendency, so do crystals of Rochelle salt.

Magnetostriction describes that characteristic which causes some metal rods, notably nickel, to shrink slightly when placed in a magnetic field. Such rods can be induced to vibrate at their natural frequency and so produce ultrasonic waves.

Transducers operating on either of these principles are simply bundles of crystals, connected electrically, or resonant metal tubes suspended in a magnetic field. Once hooked up to an oscillator they will shiver and shake to an ultrasonic beat.

The applications appear limitless. In London, England, a company has developed a high-frequency sound generator that scares rats, mice and birds out of the granary as well as their wits. The sounds, which cannot be heard by human

beings, are broadcast at irregular intervals so that vermin cannot get used to them. The company claims the system is humane, permanent and clean.

It's certainly effective. Every bird and rat fled one seed store within seven days of the apparatus being installed. The mice squeaked on a little longer, but even they had disappeared after eight weeks.

Another British innovation is an experimental device to replace the conventional pressure jet used for injecting fuel oil into burners. Instead, the fuel is fed to the tip of an ultrasonic vibrator where it is atomized, the droplet size remaining constant under all conditions.

Ultrasonic drilling is achieved by vibrating the cutting tool in an abrasive solution. The ultrasound produced by the tool squeezes the abrasive particles with fantastic force against the material being cut. Square holes are a whiz for the ultrasonic drill, which bores to whatever the shape of the cutter. And still in its infancy is ultrasonic welding, in which materials are literally shaken together.

Ultrasonics is the silent science. It is playing an increasingly important role in modern living and sound waves may have probed the jet we fly in, or the dam which helps supply our power. Yet we're still pushing back the frontiers of this eerie new world and it may be that its greatest contributions have yet to be ushered in — quietly.



planning a province

Assuming you owned a rambling fifty-room mansion, would you eat, sleep and wash the dishes in one stuffy room?

Of course not, you say. That's crazy. Yet there's an amazing parallel in the way nearly one-third of Ontario's entire population lives and works within the confines of Metropolitan Toronto.

It's a glaring example of economic imbalance and the problem is how to bridge the gulf between booming megalopolitan sprawl and areas of relative depression. How do you siphon off people, industry and services to areas crying out for a stake in Canadian prosperity?

One answer is regional development. But only in the last decade or so has there been any serious attempt to develop the province on an organized basis and only in this Centennial year do we see the start of a full-scale scientific assault on Ontario's economic needs.

Since Prime Minister John Robarts introduced the government's "Design for Development" legislation last year - a program aimed at giving all regions of the province a share in government spending and at creating an atmosphere that will encourage economic growth - there's been a flurry of behind-the-scenes activity. And some of the top economic brains in Canada, the United States and Europe will soon be helping to mold the Ontario of tomorrow.

Heading the program from his ninth-floor headquarters at the Department of Economics and Development in Toronto is Professor Richard S. Thoman, fresh from the Geography Department at Queen's University. He started his new job on a part-time basis before Christmas and is now fulltime director of regional development, working with Ontario's Chief Economist H. I. Macdonald.

Professor Thoman will first of all conduct an exhaustive economic study through the province's universities, private consultants and his own department. "We are taking on extra staff and are looking for able people, preferably with a m degree," he says.

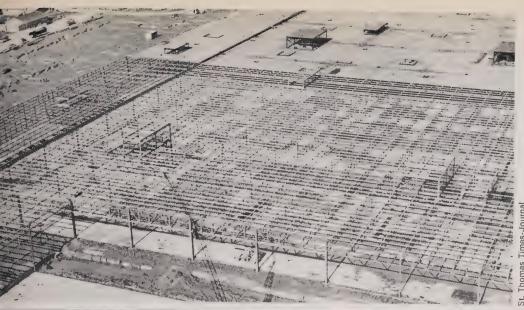
Results of the studies, which will range diversity of factors from population growth development of the province's chemical in will be sent to leading economists in America and Europe for their comments.

"I think it is far better to work with peop know Ontario, but from time to time to our thinking to people from outside," he

At the same time, no small role will be plant those with their fingers on the pulse of th munity - the regional development c Composed mainly of municipal represe and local businessmen, these organization promoted economic expansion since the fo of the first council in Ottawa in 1954.

A great deal of information is already I by these councils, which produce such i industrial brochures, calendars and touris ture. They also conduct numerous e surveys within their region. Service on each is unpaid apart from a small full-time stafby a general manager. Nevertheless, the councils have scored some outstanding st

Regional development councils were



An exhibit at a Chicago electronics conference, a new technological institute at Kirkland Lake and an automobile plant at Talbotville—all were inspired to a greater or lesser degree by the activities of the local development council.



Progressive thinking and a modern headquarters go hand in hand as far as the London-based Lake Erie Regional Development Council is concerned. Three development officials see Boeing 727s on the final assembly line at Seattle in the United States.

g a new technical college in Kirkland Lake tracting the Ford Motor Company to build t Talbotville. And regional developers have uch to secure an abattoir that will boost cattle industry at the Lakehead.

ctivities of the ten regional councils are ined solely to the promotion of industry, of Economics and Development Stanley all said recently: "Regional development ean industrial development — wherever

But it also means planning now for a forests in the year 2000 AD. It means for our new cities and towns, our wilder-creation areas, our high-use recreation in housing."

D Hydro keeps in close touch with both ical and economic aspects of regional ment and is a corporate member of most

re able to answer questions about the f electric energy to any new plant which me into a region and we let the industrial ioners know we are there to give them any an," says a Hydro spokesman.

ocal Hydro commissions have a link with onal council through the mayor, an ex-

officio member of each commission. In many cases, the mayor is also the municipality's representative on the regional development council.

"Design for Development" has added new impetus to the whole concept of regional development. The new legislation provides each regional council with an annual grant of \$15,000 and up to \$10,000 a year to match sums raised locally for each council. Municipalities wishing to join pay up to 10½ per head of their population, although some regional councils place an upper limit on the amount a member municipality must contribute.

Economic facts collected from studies now being initiated will be considered by a Cabinet committee, which will also examine development plans and programs submitted by senior civil servants on behalf of their departments. Top civil servants will also sit on an advisory board for each of the 10 regions.

The inflow of information may well influence the location of new hospitals, jails or other institutions. It could also determine the pattern of highway and railroad development and the placing of government offices.

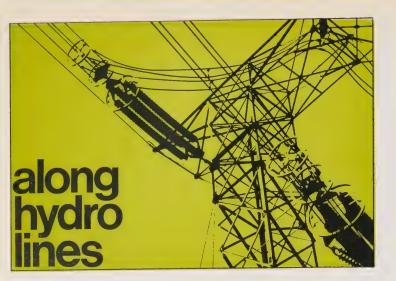
Professor Thoman sees the new program in three stages. First there is the inventory stage,

which is already under way. Then there is the evaluation of the incoming information and lastly the programming and implementation on the basis of this evaluation. The first stage is a continuing process and data obtained from studies will be translated into action long before a comprehensive inventory has been taken.

Says Professor Thoman: "This first stage is not just a matter of obtaining up-to-date insight into the natural and human resources in any area. We will also have to avoid duplication of effort by obtaining a better knowledge of the programs, policies and information acquired by universities, consulting firms and other provincial and federal government departments."

A good yardstick of the province's bounding economy is the demand for electric power, which is doubling every 10 to 12 years. Today's peak demand of 8,565,000 kilowatts, for example, is expected to reach 20,000,000 kilowatts by 1980.

Such virulent and unprecedented expansion is bound to throw a strain on existing governmental structure and changes will probably have to come. One thing is certain — we're going to hear a great deal more about regional development in the months and years ahead.



Paving the way

Leo Roy, president of the Canadian Electrical Association, said in Toronto that utilities should be heading off objections to inevitable rate increases by showing customers what a bargain they are getting.

Mr. Roy said at a meeting of the CEA general and sales sections: "Our public relations image is probably one of the most vital problems affecting the electrical industry today. We all know there is a limit to how much longer our soaring costs can be absorbed by increased efficiency; rate increases must become general before long if we are to maintain service to meet presentday demands and the continuity expected."

Mr. Roy is general manager of distribution and sales for Hydro-Quebec.

Pointing out that the electrical bill is the smallest item in the domestic budget, he asked: "How many of us in the electrical industry have really told, with any degree of success, what the customer gets for the price of a couple of cups of coffee a day?"

He suggested electric utilities might find it advantageous to consider monthly bills rather than bi-monthly to avoid unfavorable comparisons with gas bills, which arrive monthly.

Hydro-Quebec has announced general rate increases effective May 15, 1967. Under the new rates, domestic customers will be paying from 50 cents to \$2 more each month.

Cool dive

If you're getting a little weary of that nice comfortable desk job, how about switching with these gentlemen? They were splashing around in the frigid Madawaska River this winter to clean a



A chilling prospect

100-ton concrete plug that would later seal off the dam a new Mountain Chute hydro-electric station.

To stem the waters and fill the station headpond, engi used heavy cables to raise the plug off the river bed and blo opening in the dam. Once the plug was at an angle of more 45 degrees to the horizontal, water pressure did the res nudged it into place.

Cottage rate changes

Cottage owners will pay slightly less for their power in cases, slightly more in others, under new domestic seasonal introduced by Ontario Hydro this year.

They previously paid a minimum \$40 for the first 700 kilo hours, 2.4c. for each of the next 200 kilowatt-hours and a kilowatt-hour on the balance. Now the province has divided into zones of high and low customer concentration different rates for each category.

The minimum \$40 charge for the first 700 killowatt-ho unchanged, but customers in zones of high concentration future pay 1.7c. for each of the next 800 kilowatt-hours and on all additional kilowatt-hours. Comparable rates for zor low customer concentration will be 2c. and 1.25c. a kilo hour respectively.

'The new rates recognize both customer concentration the trend toward longer and more efficient use of electric; in seasonal dwellings," says a Hydro spokesman.

AMEU fetes new "boss"



He'll hammer home the point

More than 59 municipal and provincial Hydro figures met Guelph Country Club to honor A. Gordon Stacey, newly-6 president of the AMEU. At the traditional testimonial Dr. J. D. Fleming (left) of Dundas, new president of the (presented a gavel to Mr. Stacey. E. F. Burbank of To immediate past president, gave cuff links on behalf of the A

Dr. J. M. Hambley, general manager of Ontario Hydro, s AMEU is an important part of the Hydro concept and that i strong president in Gordon Stacey. He told the new pre that Hydro management was 100 per cent behind him. Ontario Hydro's First Vice-Chairman D. P. Cliff said th AMEU and OMEA, working closely with the provincial boo helped to give Ontario one of the lowest rate structures

After congratulations from Guelph Mayor R. W. Smi Guelph Hydro Vice-Chairman H. F. Johnson, Mr. Stacey tl those who attended and reminded them that it was 40 since anyone from Guelph had headed the AMEU. He pr to carry on in the spirit of his late townsman, J. J. Hegg.

ter Pembroke Hydro



g the ribbon

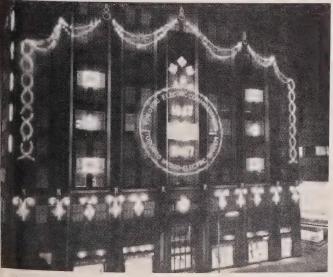
proke took another step in its 83-year romance with electric er when the town's new Hydro Commission officially opened fices for business last month. Mayor William Kutchke, left, Ontario Hydro Chairman George E. Gathercole did the n cutting.

sidents had been supplied by the privately-owned Pembroke ric Light Company for more than 70 years. Electric lights to the town in 1884. The new municipal utility bought the own" facilities of the company for \$1,964,000 and is now ag about 5,300 customers. Ontario Hydro purchased the ric Light Company's facilities surrounding Pembroke, where customers are located. A referendum dealing with the attion of the commission and the borrowing of the necessary y was approved by voters last October.

airman Eric Work, Mayor Kutchke and Arthur McNair were nted by the town council to form the commission for the ce of 1967. Commissioners will be chosen by the people at ext municipal election.

trical mural

opriately enough, Toronto Hydro is lighting the way in ennial year. The utility's headquarters on Carleton Street is ng a mural containing 6,000 light bulbs. Officiating at the



sed up for the party

turn-on ceremonies were Chairman John McMechan with Mayor William Dennison, General Manager Harry Hyde and Vice-Chairman Fred H. Gardiner assisting.

The display was designed by Toronto Hydro engineer D. J. McKenzie and incorporates part of the Christmas lights to reduce costs. The switch-on coincided with Toronto Hydro achieving a record load of one million horsepower.

Elsewhere in the city, lights featuring the Centennial symbol are being used as overhead decorations along the main streets.

Quebec to build on the Ottawa

A \$40,000,000 generating station will be built on the Ottawa River, 40 miles northeast of North Bay, by Hydro-Quebec. Initial construction on the hydro-electric project is scheduled for late 1968 and work will be completed early in 1972.

To be located upstream from Ontario Hydro's Otto Holden generating station, the Quebec plant will have a capacity of 150,000 kilowatts. As part of the project, the level of a chain of lakes will be raised 70 feet and a mile-long tunnel blasted out to carry water to the turbines. Between 1,200 and 1,500 men will be employed during park construction.

Safety seminars



How's that for a snip?

Two hundred and fifty supervisors from electrical utilities as far apart as Port Hope and Owen Sound attended a two-day safety seminar March 6 and 7 in Toronto. Six other Electrical Utilities Safety Association seminars were held throughout the province this month and last.

Delegates covered such subjects as underground hazards, falls from poles, communications and the reporting and investigation of accidents. Seen examining some of the equipment displayed at the Toronto meeting are John McGinn and John Hepburn, both of Port Hope Hydro.

A family affair

Top department stores in London, England, are selling high quality table lamps designed and manufactured by a family firm at Oak Ridges, north of Toronto. Together with their six children, aged from 10 to 24, Lotte and Gunnar Bostlund are producing hand-painted and carved stoneware lamps with textured fibreglass shades.

Peter Bostlund, 21, second eldest of four sons and two daughters, is vice-president and sales executive of Bostlund Industries Limited. He visited Britain as the youngest businessman ever to take part in a sales mission sponsored by the Ontario Department of Economics and Development. With encouraging

sample orders booked, he expects to set up a distribution com-

Design of shades and bases, hand painting and carving, is carried out by Mrs. Lotte Bostlund. Her husband, a ceramics expert, produces the lamps which are wired by the younger sons and daughters. Other family members are responsible for sales and marketing. The Bostlunds moved to Canada from Denmark in 1952 after their ceramic electrical insulator factory was destroyed by fire.

municipal briefs

Representatives from the nine districts of the OMEA and AMEU will attend an initial meeting in Toronto on May 26 aimed at developing a long-range public relations program. Guidelines will be established for municipal electrical utilities across the

Windsor Utilities Commission recently hosted a meeting of the Essex County Electric Club at which the electrical modernization plan was featured. G. K. Pepper, manager of residential sales for Ontario Hydro, and C. R. Connolly, manager of consumer finance, outlined the EM plan for the 250 electrical contracting and consulting people attending. A service guide was presented by the Windsor utility at the same meeting.

Mere mention of fluoride is enough to get some people hot under the collar and the City of Kingston is one of the latest to switch positions on this controversial issue. After slightly less than a year of drinking fluoridated water, the voters changed their mind and, after a recount, city council instructed the PUC to stop adding the chemical. "It was a very close vote on each occasion," says PUC manager G. R. Davis. His utility serves about 12,000 water consumers.

St. Catharines PUC is inaugurating a lamp replacement program that will virtually eliminate blackouts on city streets. The \$12,000a-year scheme will mean that incandescent lamps on residential streets will be cleaned and replaced twice yearly while fluorescent and mercury-vapor lighting will be cleaned yearly. A boom and bucket unit is being purchased to do the job. Cost of the program will come out of city funds.

Helen Appleton, clerk-treasurer of Prescott PUC, is retiring in

July after 46 years of service.

The Board of Light and Heat Commissioners of the City of Guelph is no more. From now on it will simply be known as Guelph Hydro. The step was taken at a recent commission meeting when a new "GH" symbol was approved for use on all stationery. According to General Manager, Gordon Stacey, the lengthy name (it will still remain the legal designation) has caused considerable confusion to customers, particularly when writing cheques.

J. Kenneth Fee has been appointed assistant general manager of Kingston PUC. Mr. Fee, senior engineer since joining the PUC in 1954, has been in charge of engineering and operations of the electric, gas and water departments and, more recently, the transit department. A director of the AMEU, he graduated from

Queen's University in 1944.

At the urging of the PUC, St. Thomas council will soon remove all trace of Gas from the city. It seems that Gas is a short street bordering on PUC property and Commission Chairman George Lang asked if the name "could be changed to something more appropriate." Mayor V. A. Barrie said the street will eventually become an extension of Scott Street, "so we might just as well change the name now."

Doug Armstrong has been named manager and secretarytreasurer of Zurich Hydro. He replaces Earl Flaxbard, who has moved to a local wood products company as vice-presi Mr. Armstrong has lived in Zurich for a number of years.

South Grimsby PUC has taken over electric service previous provided by Smithville Hydro. The move is in line with remendations of a recent regional government study. This i first time South Grimsby PUC has supplied electric power. St. Thomas PUC workmen are now sporting a bumper cro safety decals on their hard hats. The awards, made by Electrical Utilities Safety Association, were presented to 26

for their years without a lost-time injury. Nineteen received year decals, four got three-year decals and three qualifie

Signed up for life

two-year decals.



Honor of a lifetime

Lifetime membership in the Association of Municipal Ele Utilities has been awarded to Dr. J. Mervyn Hambley, C Hydro's general manager. The honor was presented Hambley, pictured on the right, at the association's annual m by the outgoing president, E. F. Burbank.

The citation on a framed goat skin scroll said that Dr. Han integrity, patience, co-operation and modesty combined gentlemanly conduct had won the respect of all who kno

It added: "We are indebted for his leadership in the fiengineering and administration and by means of this (convey to him our admiration for his contribution to our pr especially, and also in the field of electrical generation distribution.'

February energy production

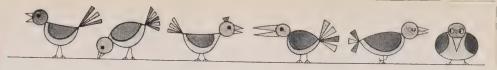
Primary energy provided by Ontario Hydro in Febru totalled 4.29 billion kilowatt-hours, an increase of per cent over the same month a year ago.

For the first two months of 1967, the total is billion kilowatt-hours, up 8.8 per cent over the s period last year.

Adjusted for seasonal influences, primary energy mand in February was 4.27 billion kilowatt-hours, per cent more than the previous month.

The seasonally adjusted total for February repres 51.25 billion kilowatt-hours at annual rates. Thi 368.45 per cent of the energy demand in 1949.

ff the wires



Don Wright

soulless wail of the big diesel locomotive ed the quiet evening countryside and lights d with increasing frequency against the ge windows as the fast train slid into the rbs of Montreal. Inside, stewards served last refreshments and readied baggage for ining.

at 22 in the rear car was occupied by a man rive mien and medium stature who had ed to surrender his black briefcase to the ttendant and now slipped on dark, heavyed glasses as he prepared to descend. His difference coat bulged suspiciously over the preast and he patted it reassuringly before any the car.

orning the swarm of taxis lined up at the n exit, the man who had occupied seat 22 into the chilly spring night. Glancing y left and right, he made his way for two half blocks to a hotel of good reputation noderate rates. He signed the register with liberately indecipherable scrawl and not a was exchanged as he tipped the bell hop, d the room door and slipped on the night

o was this fellow? A secret agent or a per of the Mafia in town to arrange a real e deal for the disposal of future victims? as neither.

her, he was a man who had remained too within the confines of Toronto - to wit: correspondent. Why the peculiar behavior? nvinced through newspaper and magazine ints that to be revealed as an English ing uni-linguist in Montreal was to court er, we had been at some pains to disguise entity. That suspicious breast pocket bulge only an English language edition of Mac-Magazine we had deemed discreet to al from the public view. And the hi-jinks registration desk was a sly move to deceive n, the room waiter, and prevent him from ng strychnine into our English alphabet should we decide it was safer to conduct ess from the security of the hotel room our stav

Int sunlight and the courageous example of nglish sparrows breakfasting audaciously is streets put us to shame next morning and to out to see for ourselves what all the fuss about over on the islands of Notre-Dame t. Helena.

a beard, bomb or beret was in sight as we a cab. Climbing in, we made our first al error with the command "Conduisezl'Exposition Universel et International de

'don, monsieur," replied the cabbie, "but t think we have one of those. Why not let ke you over to the Expo site? It's well a visit."

wing as how this was quite possibly true, nee this was our goal in any event, we him on in English. Faux pas number two ed in asking what he thought of the fair. "Sacre-bleu," he exploded, "this is not a fair, this is the Exposition Universel et International de 1967." His crescendo of invective against one and all who might be so crass as to compare Expo with any of man's other achievements, past, present or future, reached such heights as to cause him to miss three rather important turns and tack an extra 75 cents on the fare.

The tirade continued to the very doors of the administration building until the driver, finally aware that his words were competing for attention with the steady ticking of the taxi meter, switched off the offending instrument and continued his harangue on his own time.

Now the men who wheel taxis through the streets of Montreal are not noted for their naivety. To them, gun fights and three-alarm fires are all in a day's work and anything less diverting than a mini-skirt above a well-rounded knee will do well to win a slight elevation of the eyebrow. How, then, to account for such passion on behalf of the collection of superior kiosks and hotdog stands we expected to find on the Expo site?

Mille pardons, monsieur le taxi driver, but we did not comprehend la plus grande nature of Expo nor had we any idea of what has been accomplished.

Any resemblance between Expo and the kind of event we are prone to associate with exhibitions is purely a matter of nomenclature. Don't expect to find the usual exhibits of hi-fi sets and washing machines presided over by high-powered salesmen and separated one from the other by weight-guessing booths and bingo games.

Commercialism has been played down in a genuine attempt to inform, entertain and (how ambitious can you get?) stimulate a bit of thinking on a level a notch or two above what is required to get by in a computerized world of good plumbing and instant puddings. In keeping with this approach, Ontario and Quebec Hydros have teamed up in the Resources section of Man the Producer Pavilion to present the first of three chapters in the real life thriller which has seen technology progress from the bicycle to the space ship in less than 100 years. Two or three small plaques are all that proclaim the sponsorship of this section.

Above all, we were impressed with the unity of appearance and seeming permanence of the Expo site and found it hard to credit that the whole beautiful thing must come tumbling down after October 27 in accordance with World Exhibition rules. So magnetic was the architecture that our eyeballs remained in conflict throughout the tour with the structural attractions of the buildings and those of our pretty press guide. When anything devised by the hand of man can put up any kind of a showing against this kind of competition, we reasoned, it's got to be good.

Fairgoers accustomed to candied apples and French fries washed down with pink lemonade

will have some psychological adjustments to make. They'll be required to dine in establishments with comfortable furniture and genuine atmosphere instead of the stool and counter set-ups they knew back home. And they'll have to put up with courteous, comely waitresses from half a hundred countries and substitute the finest cuisines of Asia and the Continent for the more familiar submarine sandwiches.

Maybe we shouldn't mention this, but we also saw some arrangements which looked suspiciously like beer gardens and, according to rumor, upholstered lounges will be dispensing refreshments well calculated to revitalize footweary visitors. Customers from Ontario will be readily recognized by their guilty expressions upon encountering the ungodly combination of comfort, booze and bonhomie.

And then, of course, there is Montreal itself. Expo visitors who neglect to allow some time to savor the sights and sounds of the big city will be doing themselves a disservice. With its towering skyscrapers and quaint boutiques, chaotic traffic and avant garde subway, excellent restaurants and bawdy nightclubs, Mademoiselle Montreal is as full of contradictions as the feminine personality.

What sets it aside from Toronto, New York or Chicago? Like the Frenchman said in trying to pin-point the difference between boys and girls, it's hard to describe but — vive la difference.

At the time of our ignominious entrance upon the Expo scene, less than two months remained until opening day and we were prepared to encounter a certain amount of panic among the administrators and publicity men. Several pavilions were still wrapped up in cocoons of construction plastic, mud abounded where gondolas soon would ply and the thousands of trees transplanted from nurseries across the country stood skeletal and forlorn.

Inside the buildings it was worse. Hundreds of portable heaters blasted away in a pitiful attempt to dispel the cold, ugly metal ribs stood out from unfinished walls and bits and pieces of exhibits huddled patiently under canvas, awaiting their moment of glory.

But the panic had passed. Administration officers were the confident air of people who had weathered the crisis and won. A few deft touches of the magic wand wielded by decorator and designer and they knew that the huge bon bon they had worked so hard to prepare for Canada's birthday party would be ready for the table.

Two unknown quantities remain. The effectiveness of the all-important detailed planning necessary to transform the static parts into a functional whole has yet to be tested. And there is the audience. No cast likes playing to empty seats. But that's up to you and me.





she'll be at the party ...

As an Expo hostess, she'll be there. We'll be there. We hope you will, too. We missed Canada's birthday celebrations back in 1867. Now Hydro in Ontario is in its sizzling sixties and we're making up for lost time with an all-out Centennial effort. Over at Niagara Falls, for instance, there's the permanent Hydro Hall of Memory fitting the story of Ontario's public power neatly under one roof. We've also a sizeable stake in Expo and we'd like to see you at both. Besides, look what you might miss!



ontario hydro news

may/1967
•evolution in lake erie
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TORONTO S S OTNOADT

PERIODICALS DEPT UNIVERSITY OF

Ontario molo news may/67

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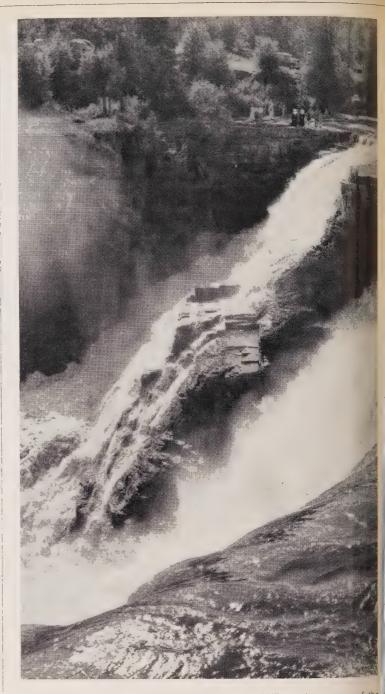
Cold grey mists enshroud these boats of the fishing fleet of Lake Erie, which accounts for as much fish as the rest of the Great Lakes combined. In spite of many technical improvements it's a tough life with a working day from 6 a.m. until after dark, 10 months of the year. How the fishermen operate and what they catch is described on page two.

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Boiling over rugged Kakabeka Falls, near Fort William, the waters of the Kaministikwia River are a dizzying reminder of the power of nature. The falls were first put to electrical use just after the turn of the century when the Kaministiquia Power Company built an ingenious hydraulic system to convey water from rapids above the falls to a powerhouse about a mile downstream. Ontario Hydro, who acquired the plant in 1949, is now spending more than \$1 million to give the installation new life.

Hydro-electric power is not forgotten in an age of superbly efficient thermal plants that feed on pulverized coal or uranium pellets. Experience has shown how they faithfully churn out the kilowatt-hours year after year with a minimum of attention.

And in keeping with Ontario Hydro's policy of developing every suitable river site comes the announcement that it will also build a \$47.6 million station at Lower Notch, on the Montreal River near Cobalt, and add a \$20.7 million extension to the George W. Rayner power station on the Mississagi River near Thessalon.

Elsewhere on the Mississagi, construction forces are poised for an all-out effort at Aubrey Falls, some 50 miles upstream from the Rayner plant, where a new 130,000-kilowatt development is getting under way. Rounding out the Commission's hydro-electric program are three major projects on the Madawaska River.

where have all the walleye gone?

by Les Dobson

Catches vary greatly from year to year, but the table illustrates the overall trend in the Lake Erie fish population in a ten-year period.

	1955	1965
	12,037,000 lb	132 lb
Walleye 🥄	4,773,000 lb	346,000 lb
Carp	207,000 lb	152,000 lb
White bass		611,000 lb
Perch	4,753,000 lb 18,	603,000 lb
Smelt	2,040,000 lb 11,	711,000 lb





they're turning to smelt in lake erie

Its powerful diesel motor racing at full throttle, the tugboat Vida-C hits the lake swell head-on. Icy water heaves over the bows and slaps against the wheelhouse glass.

Skipper Bob Cobby peers into the murk and steadies the wallowing craft to meet the next wave. Behind him, his father Harry switches on the radio.

"Vida-C, Vida-C. We're about three miles out from the harbor. Is there any fishing boat close by?"

Back comes a reply. The transmission is badly garbled and almost drowned in static. Harry bends down, puts his ear to the receiver. "He says they're twenty miles down the lake. Do you want to go?"

We do. We have an appointment to see the Lake Erie fishing fleet in action and the two dozen or so homely little craft operating from Wheatley, Ontario, will be out all day despite the heavy seas and visibility down to a few hundred yards.

"Ocean skippers don't like this lake," says Bob,

altering course from south to due east. "Conditions change far too quickly."

As if to prove his point, a voice comes over the radio strong and clear. It's the US Coastguard station at Belle Isle. A large boat has run agroun and all vessels in the vicinity are warned to reduce speed.

Harry, a grizzled seaman who came out with his father from Surrey, England, before the first world war, nods toward the radio and grins.

"Things have changed since the old days," he says. "There was no radio then. We didn't have even a wrist watch... told the time between nets by the number of cigarettes we smoked." Habit dies hard and the one-time fisherman turned tug operator lights up unflustered by the violent pitching.

Times, indeed, have changed. Open boats and oilskins are things of the past. Advances in the type of nets used allow the men who fish Lake Erie today to work from the enclosed comfort of their boats. They have radar and depth-finders



ome of them even have television — and their hip-shore radio can be hooked into the telephone etwork so they can warn their wives to have upper on the table.

ut it's still a hard life. If you're out to make money ou set sail 10 months of the year at 6 a.m. and ou don't get back till dark. Small wonder that ighly paid jobs in the automotive and other idustries are luring young men away from the ke.

arry comes up from the galley with a pot of eaming coffee. There aren't enough mugs to go ound and he drinks his, apologetically, from a sucer. He switches radio channels to cut out the conversation of fishermen and tune in some up music. The Vida-C continues to plow down the lake.

ob leans forward. "There's something dead read." It's nothing to us but a faint blur on the rortened horizon. "Looks like the Andave," rys Bob, and he's right, of course.

ne skipper of the fishing boat is fighting the pavy swell to keep her beside a tall flag, which marks the end of a gill net anchored to the lake bed. A roller for the mechanical gill net lifter is swung outboard through a hatchway and the end of the net attached. Then the net is pulled aboard. It's full of small fish, caught in the fine mesh.

They're smelt, and that's another change. Veteran fishermen can remember when their nets were choked with lake herring and whitefish, how more recently they fished for bluepike and walleye. One of the earliest known denizens was the musky, which graced the table of the celebrated Colonel Talbot in the early 1800s.

Now all these have disappeared and the dominant catches are smelt and perch. Not that the lake's fish population appears any the less abundant. In fact, Lake Erie provides as much fish as the rest of the Great Lakes combined.

Theories, of course, abound for this shift in species. Some put the blame on blasting along the shoreline and in the Detroit River affecting

spawning habits. Others say the major cause is pollution.

Certainly Lake Erie is the most polluted of all the Great Lakes. "You can even see the build-up on the depth-finder," says Harry Cobby.

Professor George Langford, former director of the University of Toronto's Great Lakes Institute, has repeatedly warned that the continued pouring of chemicals into Lake Erie, combined with the run-off of fertilizer from the land, may well put an end to all fish life.

He says that these nutrients are fertilizing natural algae. In time the algae sinks to the bottom of the lake and decays, taking life-giving oxygen from the water. Scientists aboard the Great Lakes Institute research vessel Port Dauphine have discovered a layer of dead water affecting one-quarter of the lake.

Dr. R. G. Ferguson, director of the Department of Lands and Forests fisheries research station at Wheatley, recognizes that pollution and the introduction of exotic species such as smelt, could be important factors in the disappearance of





Boats old and new ply their trade on Lake Erie. The skipper of one of the oldest fishing boats steadies his craft as gill net is hauled aboard while Cecil Balkwill heads the modern Donna-F into Wheatley harbor leaving his crew to deal with the day's catch.



Lake Erie expert Dr. R. G. Ferguson at work in the fisheries research station at Wheatley.

some kinds of fish, but the increased efficiency of the fishermen must also be considered.

Harry Cobby pulls at another cigarette. "Weather seems to be closing in," he says. "I don't think we're going to find anyone else."

Voices from the fishing fleet still crackle frustratingly over the air. Bob heads the tug due north and then swings southwest, hugging the clay bluffs that run along the shore. This time we're riding with the swell and the going is smooth.

"Those bluffs get lower until there's nothing at all by the time we get to Wheatley," says Harry. "After a while you get to know the entire coastline from the Detroit River to the Niagara."

So we leave the invisible fleet to their work. And as we head home past bobbing marker flags and pieces of stray cork from the nets, the words of Dr. Ferguson come to mind.

"Canadian fishermen on this lake have proved more adaptable than their American counterparts, so much so that the fishing industry south of the international boundary has all but disappeared.

"They have introduced the gill net, which is extremely mobile. You can pick it up at a moment's notice and set it down 20 or 30 miles

"They have gone to steel boats, radio, sonar and radar and they are an extremely effective to they are intelligent, ambitious and quick to take advantage of all that modern technology can of

All things considered, it looks as though the Le Erie fishermen will be around for a long time γ

Omsteads of Wheatle

By far the largest and most successful fishing company on the Great Lakes is the Wheatley-based firm of Omstead Fisheries. And it's very much a family affair.





led by seven brothers and two nephews,
Imstead enterprise virtually controls the
Lake Erie industry. Apart from its own
of six boats — two more are on the stocks —
Impany purchases catches from fishermen
ating along the entire northern shore
lake.

o buys, processes and packs haddock, cod gole from Maritime ports, even shrimps from g Kong, and in recent years the brothers seven branched into a prospering frozen-food less.

with an assembly-line operation, two vast storage rooms for fish and a separate illion building for processing and storing n vegetables, Omstead is as large a consumer actric power as the entire town of Dryden.

ge rooms are maintained at a frigid zero ses. Equipment in the fish processing plant is 18 hours a day and includes automatic ng machines worth a cool \$40,000 apiece, raders and a cooking department where some is are buttered and deep-fried, again on the 1bly line.

Pride of the Omstead fleet is a 75-foot vessel named the Donna-F which, apart from being equipped with all the paraphernalia of modern navigation, is electrically heated. A cooker, refrigerator and television set figure among other electrical comforts for her five-man crew.

Power for these appliances is supplied by a diesel generator when the boat is on the lake; in the harbor the crew simply plug into the normal power supply while they pick the day's catch from the nets.

Omstead's success is an unlikely story against what, at times, seemed incredible odds. Undoubtedly the driving force behind the partnership is company president Leonard Omstead, Sr., who as a 14-year-old schoolboy was delivering loads of fish from Wheatley to Detroit by Model-T Ford.

Unfortunately, others came into the trucking business and cut-throat competition forced the young Omstead on to the boats — experience that would later stand him in good stead.

His father started Omstead Fisheries with a daily production of two barrels of fish and built it into a small and struggling company with annual sales round \$30,000. He died in 1942, leaving the business to Leonard and another brother, Duane. Gradually, as the company expanded, other members of the family were brought in.

They had their share of trouble. The plant was practically destroyed by fire in 1948 and they also had to meet the problem of the changing fish population.

Most of the fishing community regarded it as a blight when smelt became the dominant species some years ago. Not so the Omsteads, who decided to market a fish which others were burning on the beach. They even invented their own machinery to wash, behead and fillet the silvery crop.

While fishing is still an important part of the Omstead enterprise, the company has diversified so much that it could probably lose that side of the business and still make money. There's one thing, though, that the fisheries would find difficult to do without. And that's electric power.



Headed by seven brothers and two nephews, the firm of Omstead Fisheries virtually dominates the Lake Erie fishing industry. Pictures show perch arriving at the plant, a processing line for smelt and the shipping and receiving yard.

looking better electrically

by Hal O'Neil

There's little drama in the swish of a soft lead pencil travelling across sketch paper. But its course may help determine the degree of respect which thousands hold for Ontario Hydro.

While it sounds like a frightening responsibility for the wielder of the pencil, it's one the Commission architect and his staff face every day.

People are more image-conscious now than ever before. Their feelings are influenced by the design of a building as well as by the treatment they receive from company or utility employees or the rates charged for service. But costs are also an over-riding consideration so that Hydro's architectural department must combine aesthetics with function.

Commission Architect Ken Candy says that while a structure must harmonize with its surroundings, the future development of the community must also be considered.

Increased demands for electrical energy, for example, have necessitated the building of transformer stations in urban areas across t province. But it's in just these areas that the traditional outdoor equipment bordered by familiar chain-link fence can no longer be to

The result is that the newer stations are total enclosed, not only to control transformer no but also to provide a well-designed building will be an asset to the community. The old concept of attempting to make a transformer station look like a house goes against the gramwight. Candy; he feels that architecture, above should be honest and straightforward.

"What matters most is architectural form an texture combined with function, not outmot cliches," he says. "Our whole society is ch rapidly and it demands that we re-examine centire environment and abandon some of the traditional concepts of the past."

"As far as I'm concerned," he adds, "the sm buildings are just as important as the larger From the design standpoint they deserve juthe same attention."

Aesthetic touches need not always be expe Rather than remove a huge boulder (which Candy professes to be fond of) from the appr to the Robert H. Saunders-St. Lawence pov station near Cornwall, it was left and featur as an integral part of the landscaping. At m remote stations, excavated boulders have b utilized to retain a rustic atmosphere.

Landscaping plays an important role and the department provides advice on the planting flowers and shrubs at generating stations a the province.

In Mr. Candy's 20-odd years at Hydro, mar changes have taken place not only in build design but in materials used. Poured concr and heavy trusses have given way to precas sculptured slabs and prefabricated rigid fr

Precasting has a number of advantages. It uniformity because the slabs are manufactured a shop under controlled conditions. Pouring concrete on the job can be expensive and consuming, particularly during the long with of Northern Ontario. Today many powerhous are enclosed with prefabricated aluminum which have a pleasing appearance and call erected quickly under any weather conditions.

"Of course, precasting isn't always the ansays the architect. "Transportation from fa to site must be considered part of the cost that precast slabs would be uneconomical you were working in the James Bay water. Architects in business for themselves frequask Mr. Candy whether his Hydro work or enough scope.

"It's like operating a private practice," he's
"We do everything a private architect would



only difference is that we don't have to go fter the jobs."

ng the variety of work the department has carrying out recently are such projects as ference and development centre near geville and a community centre at Hydro's oi Canyon settlement, 100 miles north of ins. Mr. Candy says these two projects are ost interesting and challenging yet.

d never designed a swimming pool for o until these centres came along. Then n a year I've been involved with two pools,"

projects have been as much environmental in e as structural. At remote Abitibi Canyon, ommunity centre has been designed, as it "to take the residents away from the on." There will be few windows in the ng to remind people of their isolation. ces are they've come to the centre to forget.

tivities like bowling, skating, curling and ming radiate from the building's central e and snack bar, which will act as a main where visitors and residents of the 400g community may congregate.

ed in the Hockley Valley, near Orangeville, on-to-be-completed conference centre is ally one building, but a group of six which inction as one unit. Much study and ht went into placing the buildings on the cre site, since it was important not to b the setting.

these things in mind, we came up with gn of the main complex - six separate ngs connected by glass-enclosed walkways estled into the highest slope near the centre property," says Mr. Candy.

oncrete block buildings will be covered in sawn red cedar and the roofs topped with rown shingles. This mantle, combined with rambling Scandinavian look, belies the urpose of the centre — learning, thinking aining. It was the architect's intention not itutionalize the complex.

ass-enclosed walkways will meander the hill, connecting the first level of a building with the second floor of the seventh building will be set apart to workshops, classrooms and demonstration or trades and technical training.

ays, however, are not the only link tying ining centre together. The basic, rustic has been preserved throughout by the on of paint, draperies and carpeting. won't be any sharp contrasts from one the next. Gold tones will melt into

oranges, then into blues. In each room the texture of the carpet and the drapes will complement the wall colour. Even the coating being used on the walls and ceiling of the swimming pool has a rustic texture.

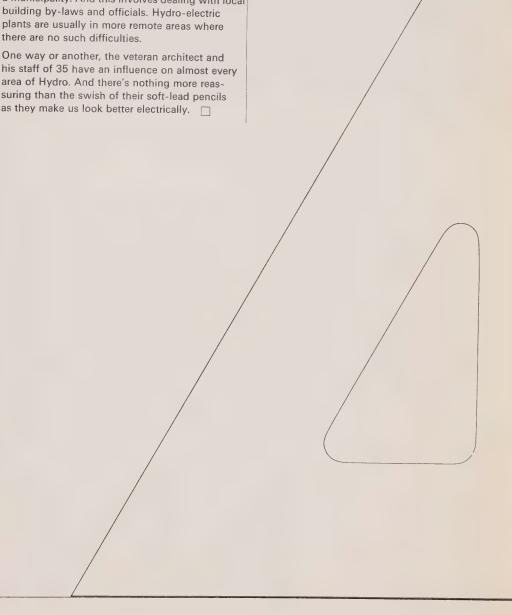
As the architect puts it: "We've carried the theme right through to the last door knob."

Back-tracking to speak about the problems of working for one employer, the genial pipe smoker explained that in some ways it is more demanding than working as an independent architect.

"We have to live with a building long after an architect in private practice would have forgotten about it," he said, "so the costs of maintenance and the problems of vandalism, fire and sound transmission between buildings must be considered."

Hydro's increasing emphasis on coal-fired and nuclear generating plants has brought fresh problems. Since thermal stations are located close to load centres, they will usually be inside a municipality. And this involves dealing with local building by-laws and officials. Hydro-electric plants are usually in more remote areas where

One way or another, the veteran architect and his staff of 35 have an influence on almost every area of Hydro. And there's nothing more reassuring than the swish of their soft-lead pencils



t be an asset to the community





Lindsay is proud of the change

If you need more elbow room and want to spruce up your public image, but you're worried about costs, don't fret. Just ask Lindsay Hydro.

Its solution is simple - hire a young architect with instructions to clothe the existing structure for the sizzling sixties. The result is one of the town's most striking buildings, and it cost only \$30,000

The new-look quarters were officially opened April 12 with Ontario Hydro Chairman George E. Gathercole and veteran local Commissioner Lorne Waddell doing the ribbon-cutting. Making the most of the opportunity, the utility followed the ceremony with an open house which drew more than 800 residents.

Not only did Lindsay Hydro gain a new look, it also doubled the office space. The original building rose a storey-and-a-half at the front and it was a relatively simple matter to lift the roof and make it a full two storeys. The interior of the upper level hasn't been finished, but when expansion is necessary the room is there. In the meantime it provides useful storage space.

Other improvements include facing the old building with white enamelled aluminum. Glazed black brick was used at each end and provides background for the lighted "Lindsay Hydro" sign. A band of black aluminum across the top of the building masks colored floodlights. By recessing the entrance into the front the problem of outside steps, which can be hazardous in winter, was eliminated.

Prior to the opening, about 100 officials from across the province attended a luncheon at which

Mr. Gathercole was the speaker. He pointed out that Lindsay has an honored place in provincial geography as the gateway to the Kawartha Lakes and the Haliburton Highlands.

He said that electricity was first used in the town by the visiting Barnum and Bailey circus back in

"Lindsay Hydro has served the community well over the years, and this Centennial year project gives recognition in a visual way to the importance of Hydro and the services it provides," he added. "The citizens of Lindsay are shareholders in this debt-free utility."

The Hydro Chairman pointed out that Lindsay and the county of Victoria have produced many noted personalities. He mentioned the former Ontario Prime Minister Leslie Frost; Watson Kirkconnell, a former president of Acadia University; Edward Hall, president of the University of Western Ontario and Tom Eberlee, Deputy Minister of Labor for Ontario.

Calling itself "Ontario's Industrial Vacationland", the town of Lindsay has a long history. It was first visited by Champlain in 1615. Two centuries later, in 1825, it was surveyed and streets laid out. At that time it was known as Purdy's Mills, but was later changed to Lindsay taking the name of the original surveyor who was buried there. Ten years before Confederation, Lindsay was incorporated as a town with a population of about 700.

Lindsay has grown steadily if not phenomenally, over the intervening century with a 1961 census showing a population of 11,200. However, in the last five years this has jumped to over the 12,000

As the Victoria County seat it boasts a court

house, registry office, jail and library. A new vincial government building on the western trance of the town houses the departmen Agriculture, Lands and Forests, Education, We Public Works and Transport.

More than two dozen industries have made home in the town and their products range wood dowels to chalk and crayons, and moulding compounds to milk, butter and

During the last two years, the Firestone Rubber Company of Canada and Uniroyal (Limited, both giants in the rubber industry, established manufacturing plants at Lindsay employs more than 200 people.

At present, the commercial core of the tow the throes of change. New store fronts as v recently sand-blasted older brick buildings do Kent and William streets. Subdivisions of town's outskirts attest to its last decade of g

Lindsay Hydro has been keeping abreast town's growth. Its 4,400 customers repre jump of more than 200 since the end of 1! staff of 22 and a fleet of vehicles ranging half-ton pick-up to a heavy construction provide service. Last December the utility' load was just under 17,000 kilowatts, cor to the 1965 figure of 14,498.

As Mr. Gathercole observed: "Despite the tacular growth of large urban areas, the tow rural parts of Ontario will continue to be the bone of the province. It is gratifying that ind recognizing increasingly the economic and advantages of being in the smaller comm And one of the factors contributing to this availability of low-cost electric power.



These three buildings span 56 years of electrical progress. At left is the 1911 office of the Lindsay Light, Heat and Power Company. Building, centre, has housed Lindsay Hydro since its inception in 1928. Third photo shows how it looks today.

a bold new face



Commissioner Lorne Waddell, left, and Ontario Hydro Chairman George E. Gathercole, right, who jointly cut the ribbon, chat with Lindsay Hydro Manager Jack Lightbody.



More than 800 people, including retired Ontario Hydro Chairman Ross Strike, centre, toured the building at an open house following the ceremonies.

Chess anyone?

You'll have plenty of room to manoeuvre since the board stretches 500 miles across northern Ontario. The chess pieces weigh six-and-a-half tons on average and they travel on wheels.

Stakes are high and each move is very, very deliberate. When the game is over, in the 1970s, it will have cost Ontario Hydro about \$50 million and the province will be served by a single Hydro grid.

The aggressive strategy Hydro will employ has already been set in motion and by summer will be in full swing. Construction line crews, leapfrogging their way across rugged terrain, will forge the vital transmission line links. Their mobile homes are the chess pieces.

Although Hydro has strung thousands of miles of transmission lines, it has never played the game quite this way before. Work on this line, which will connect Hydro's East system (serving Southern and Northeastern Ontario) with the West System (Northwestern Ontario), is to be accomplished from trailer camps dotted along the right-of-way.

The inter-connection will ultimately permit large transfers of power between the East and West systems, affording significant operating economies and improved security.

The trailer camps will be situated about 10 miles about along the line, allowing crews to work five miles in each direction before moving on to a new camp. The initial camp at Black Creek has neen in operation for about two months. Men warking from it are setting footings for the 36naie line which will bring power from the George W. Rayner station to aid construction at the Aubrey Fails hydro-electric development on the Mississagi River, mid-way between Chapleau and Thessalon. Four camps will be used on this section, which will form part of the inter-connection.

Each camp will be composed of 15 trailers to accommodate the 65-man crews. Eight of them are sleeping trailers, housing eight men per unit. The trailers have been sectioned into four compartments with double occupancy.

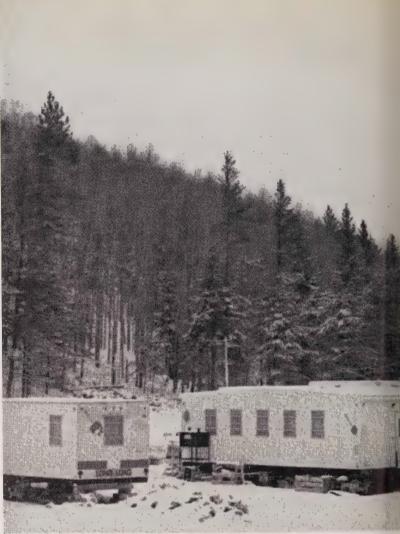
The camp cook has plenty of room to display his artistry, with one trailer forming the kitchen and two others the dining room. These three units are attached on the site to form a modern cafeteria

An office trailer with radio facilities provides for paper-work and enables the foreman to keep in touch with progress over a wide area.

Roughing it on remote jobs is pretty much a thing of the past with Hydro as the washing trailer attests. Equipped with toilets and hot water showers, it even sports an automatic clothes washer and dryer.

For off-duty hours, there's the recreation unit. It has writing desks, card tables and a movie screen. Rounding out the camp complement is a trailer, with five beds in two compartments and a storage area, for the cooking staff and guest accommodation.

Of recent years, Hydro construction camps have been portable, but the structures were prefabricated and the men slept six or eight to a "bunk house". Set-up time of these camps was considerably longer than the two days required for the trailers. The trailers have portable pump-



closing the gap

life on the eastwest inter-tie is highly mobile

by Hal O'Neil

Initial move in giant chess game is at Black Creek, first of many camps from which the tie-line will be forged. The camp cook has all the facilities of a modern hotel at his disposal in the kitchen trailer. Paper work is completed in a well laid out office trailer. A crew is shown enjoying a post-meal chat in the two dining trailers which adjoin the kitchen.

















Some interesting and highly specialized off-the-road equipment has been developed to cope with rugged terrain of east-west interconnection

Rudy Mayhew operates the controls of a boom engaged in unloading poles from his trailer rig. More rugged operations involve a Timberjack winching itself out of mud and one bulldozer hauling another mired in the rough terrain of the northern right-of-way. houses, diesel generators and plug-in type electrical distribution systems.

When construction hits full stride there will be six camps on the go and four distinct crew operations being carried out. It works this way. First, the footing crew will move into the cleared right-of-way, setting the footings onto which the steel transmission towers will be anchored.

The next crew is the assemblers. They will put together the spider-web sections of the towers. The erection crew follows, placing the massive towers in position. Finally, the conductors are strung from tower to tower over the 10-mile section. The trailer camp will then roll on to another location and the routine be repeated.

Five-ton trucks will trundle the trailers along main highways and over truck roads into the rights-of-way. Hydro saved itself a nice little sum by applying the theory that wheels are only of use when they are turning. Only enough wheels were purchased, with spares, for one camp. With six camps organized, five will be blocked up on the site and the sixth will be on the move.

Operation "leapfrog" will move into high gear this summer when work gets under way on the next leg of the inter-connection. This is the 106-mile section between Wawa and Marathon. Like the rest of the inter-tie, it will have an eventual potential of 230,000 volts.

The project is a challenging one as the line passes through rugged terrain varying from heavily timbered hills to rocky fields and swamps. One tower may stand on a mountain of rock while the next is rooted in a valley.

To meet the challenge, Hydro has been working with manufacturers to develop some interesting and highly specialized off-the-road equipment.

Rub'ber-tired Timberjacks and Tree Farmers — heavy vehicles with jointed chassis and articulated wheels to help them wiggle through swamp and mud — will perform a variety of tasks. And a 12-ton capacity transporter with a mounted crane will be used to lug heavy cable reels over bush roads. It is the largest such vehicle ever used by Hydro and may be the largest in the country.

One unique vehicle is a D7 tractor mounted with a drilling rig for preparing blast holes. A rubbertired vehicle has been equipped with an articulated boom and hook and will be used to place 4,000-pound blasting mats in position. For digging post holes and placing 85-foot poles, a crane has been mounted on a tracked vehicle. These three vehicles will be used on a section of the line between Blind River and Sudbury. Blasting must be confined for fear of damaging a nearby transmission line.

Tensioning equipment to be used on the line, although it will look like that used on previous jobs, has been improved and will save time and money.

Helicopters will form a vital part of the conductorstringing operations, laying out the pulling lines from tower to tower. These versatile machines will also speed up liaison and supply in general.

With the best in equipment and a life-time of know-how, Hydro holds a big edge in its chess game with nature. \square

looking at leamington



It's a growing community

There's an old adage that people in glass houses shouldn't throw stones. This being so there'll be little stone-throwing in the "tomato capital" of Leamington, which has more acres under glass than any similar-sized municipality in Ontario.

"Leamington, population 9,200," says the road sign and as you drive in from the west you're greeted by the fattest, reddest tomato in town (it's actually a tourist information booth — not a girl).

Dominating this lively little place is the huge plant of H. J. Heinz, established there since 1909 and subsequently expanded to cover 144 acres and become one of the world's largest tomatoprocessing operations. The former 57 varieties have also multiplied until there's one for practically every day in the year.

The importance of Heinz to Leamington is obvious, About 2,000 persons — more than one-

fifth of the entire population — work there and the plant itself consumes as much power as a fairsized town.

Not that Leamington rests smug and self-satisfied. On the contrary, the town knows exactly where it's going in the next 20 years and this accounts for a recent visit by delegates from the Association of Municipal Electrical Utilities, which represents senior management of Ontario's local Hydro utilities.

Leamington will be featured at the association's June conference in Cornwall, the theme of which will be "Planning for the Future." The town was chosen because it has an official plan outlining population and industrial trends together with a traffic study predicting road requirements up to 1985.

Hydro experts will use these studies to forecast the local utility's electrical problems in such areas as marketing, system planning, financing, manpower and safety. It is expected that other Hydro municipalities will be able to benefit from the various facets of this exercise in planning.

According to Leamington PUC Manager Jack Anderson, the existence of the food-processing industry has had a stabilizing effect on the town through good times and bad. "People have to eat regardless of the national economy," he says.

The population has also remained fairly stable, although the planners now say it will exceed 16,000 by 1985.

In addition to Heinz, two other large industries are located in the community — Pyramid Canners and the tobacco-processing plant of Dibrell Bros. Diversification is on the way with a decision by Zollner Corporation to establish a piston-manufacturing plant there.

Greenhouse operators are looking for diversity, too, and in recent years have added flowers to the tons of tomatoes and cucumbers produced in this southern-most corner of Ontario each year. Electric light is used to control and develop the growth of this new crop.

Mr. Anderson heads a PUC staff of 16, working from quarters in Princess Street. They hope eventually to leave their next-door neighbor — the gas company — and build offices on land adjoining their new \$60,000 service centre on Hazelton Street. Policy is set by a five-man commission comprising Chairman R. B. Leslie and commissioners C. W. Howdon, L. D. Pridding, J. L. Graham and Mayor A. R. Cullen.

Leamington people are nothing if not optimistic about their future. They point out how strategically they are placed in regard to Ontario industry and the teeming millions across the U.S. border (Detroit is only 33 miles to the northwest). They point out how they enjoy the same latitude as northern California and how a projected hovercraft service to Pelee Island may give a further boost to an already substantial tourist industry.

What with its mild climate and longer growing season, Leamington has always been a favorite spot for retirement. And the PUC finds that many of the old folk are choosing that most up-to-date way of keeping warm — electric heat.

"We may not be swingers in Leamington," says Mr. Anderson, "but we sure are hep."

Tomatoes and Leamington are
less synonymous — even the inf
booth is shaped like or
members of the Association of N
Electrical Utilities trace the
of that red and juicy crop from gru
to ketchup. The associfeature the town at its summer cu
in an exercise in electrical utility



Nestling in a park at Clarkson, west of Toronto, is a 156-year-old homestead packed with antiques. Its ancient walls can tell a fascinating tale, but its recent history is just as absorbing.

No casual passer-by would guess that this spic-and-span pioneer showpiece missed being bulldozed into the ground by minutes only a few years ago. Or that the rooms of this historic farmhouse are warmed by the most versatile of modern systems — electric heat.

Yet electric heating has proved to be the best means of coddling old furniture and other antiques in what is now the Lewis Bradley pioneer museum.

"Individual room temperature is tremendously important in a museum such as ours, says Mrs.

or demolition. A local resident, Kenneth Armstrong, bought the house along with two others on the BA property. When he realized he had bought a pioneer home, he offered it to Toronto Township as a historical building.

Since the Township would have difficulty administering it directly, a provincially chartered company — the Historical Foundation — was formed and took over the house as its first asset.

It took the Foundation almost a year to raise enough funds to move the house to its present Meadow Wood Park site, which forms part of the Bradley holdings.

As Mrs. Fix puts it: "Things were so tight that as we were moving the house up the road from the

kilowatts coddle the old homestead

Mary Fix, president of the Township of Toronto Historical Foundation, which administers the project. Depending upon the contents of a particular room, ideal temperatures may vary greatly and electric heating provides this flexibility.

And it's only fitting that the house itself be coddled in its old age, for it is somewhat of a minor miracle that it still exists.

The original Bradley home was built just before the War of 1812 as part of Lewis Bradley's "settler's duties" in obtaining a patent from the parliament of Upper Canada for land bordering Lake Ontario.

This first house faced an ancient Indian trail which was replaced by old Lake Shore Road. It wasn't a large house, measuring only 16 feet by 20 feet, and it was dwarfed by oaks and pines which towered as high as 200 feet throughout the area. Many of these forest giants were turned into potash because "settler's duties" also called for a frontage of not less than 150 feet to be stripped of timber.

In the 1830s romance blossomed in the house as Lewis Bradley's son brought home a bride. It was during this period that the "second house", a stretching and broadening of the original, was undertaken to accommodate the larger family.

Then, in 1846, Lewis Bradley, a United Empire Loyalist who came to Upper Canada from New England by way of New Brunswick, died. And so did all traces of the family. Neither his son, grand-children or great grandchildren or any following generation have ever been found.

The Bradley's house, however, lived on.

It survived the hammering and sawing of countless parents and the scratching and scrapping of a hundred children. It served as a year-round home in the 19th century and from the early 1900s until 1941 as a summer place. At that time it was purchased by British American Oil as part of a site for a refinery.

The house went through the rigors of many tenants until 1959, when BA was ready to build and offered all buildings on the property for removal

BA property, the bulldozers were slicing through the land where it had stood.

It was then, of course, that the real work began. The woodwork was stripped of eight coats of paint and laboriously sanded down for refinishing. Layer after layer of wallpaper had to be pulled from the walls.

Then the downstairs woodwork was repainted its original shade of green and the upstairs in brown. Wallpaper of the same design as the early 1800s was obtained to cover parlor and bedroom walls. Hand-split cedar shingles were obtained in British Columbia to restore the roof, which had been re-covered several times.

Restoration work was carried out largely by volunteers during the winter months. Workers ranged from a spritely 12-year-old to an equally spry nonagenarian. Donations from industry, private citizens and service clubs as well as grants from Toronto Township aided the project.

Furnishing the farmhouse museum has proved a challenging task. Much care and research has gone into it. Only one massive kitchen cupboard, too big for tenants or vandals to carry away, remains from the Bradley era. A 207-year-old cradle of pine, given to the museum by Mrs. Kenneth Hammond of Toronto Township, is one of the prize artifacts. Others have come from private donors and organizations like the Kumeetus Club of Clarkson, which furnished the entire formal parlor of the eight-room farmhouse.

Scores of Foundation supporters are still scouring antique auctions and dealers in an effort to have the Bradley home completed for its June 11 official Centennial unveiling. Mrs. Fix, a former reeve of Toronto Township, and the present reeve, Robert Speck, will preside at the opening.

Romance still clings to the Bradley homestead. Local legend has it that a pane of the old rolled "bubble" glass from the house with the names of the young Bradley couple and the date of their marriage still exists. But no one has ever found it.



ed in the costume of the day, Mrs. W. E. Archer, secretary of the Mississauga prical Society, points out some of the highlights of the Bradley museum. Soard electric heating contrasts with its surroundings but proves best for erving old furniture and other museum items.

nepean steps out





They aim to grow

It seems a long jump from a crumbling farmhouse to the latest in electrical utility headquarters but one of the newest members of the Hydro family has achieved just that in two short years.

Back in 1965, Nepean Hydro was a mere Cinderella clutching at the outskirts of Ottawa. It had taken over 10,220 customers and a 22,000-kilowatt load from a sprawling, fast-growing area served by Ontario Hydro. Today it supplies more than 14,000 customers while the electrical load has risen nearly 50 per cent.

But that's Nepean for you.

It's hardly stretching the fairy-tale analogy to see the airy office and service centre as the glass slipper that made Cinderella a princess. Certainly it's a far cry from the pumpkin farmhouse where the floors were beginning to collapse.

As though reflecting the dynamic growth of the utility itself, the new building was erected and furnished within six months. Basically it is an H-shaped complex, the office and service centre being linked at basement, first and second floor levels by an enclosed walkway.

The two blocks are in contrasting styles, the exterior of the service centre being stern and unrelenting compared with the white concrete and darkened glass of the office building.

The service centre's five truck bays have electrically-operated doors and are overlooked by the foreman's office and other offices serving the outside crews. There's a meter shop, warehouse and showers where men working on underground

Ribbon-cutting and the unveiling of a commemulaque are performed at Nepean Hydro opening W. Erskine Johnston, Mor Carleton, and D. P. C. Ontario Hydro's First Vice-Chairman.







tution can wash the mud off their vinyl suits. It have awfully sticky clay in Nepean," says ner Bill Moulton, who suggested the showers i orporated in the architect's design.

two-storey office building features accounted sales departments on the first floor and attractive foyer with an unusual finned. Spacious second-floor offices are protefor the management and there is a taster-ecorated boardroom. More offices, a kitchen he economics demonstrations, a conference and the heating and air-conditioning equiptre all located in the basement.

fles are heated by electric baseboard units in duct heater tempers air drawn from side for circulation throughout the building. ced units warm the garage and warehouse

area supplemented by heating cable installed in the garage floor. Radiant units and heating cable also keep entrances free of ice and snow.

More than 200 employees and guests attended a ribbon-cutting ceremony at the new building last month. Officiating was W. Erskine Johnston, MPP for Carleton. A commemorative plaque was unveiled by Ontario Hydro's First Vice-Chairman D. P. Cliff. Others at the ceremony included Richard A. Bell, MP for Carleton, and D. B. Reid, Mayor of Ottawa.

Mr. Cliff told the gathering: "I do not recall any building superior to this one serving the electrical interests of any municipality. You are to be congratulated. This structure exemplifies the aggressive spirit of the community."

Nepean Hydro Chairman H. Hargreaves said

Contrast in styles: flags are raised over the new offices of Nepean Hydro, which previously occupied the farmhouse below. MPP for Carleton W. Erskine Johnston is seen signing the guest book watched by Nepean Hydro Chairman H. Hargreaves.





the building represented a tangible sign of what co-operation, hard work and public-spirited citizens could do.

"Whatever tasks I may be called upon to undertake in the future, I know that none will give me more satisfaction than the one in which I have worked with all of you to the pinnacle we have achieved today," he said.

Much of Nepean's success in load building stems from the utility's aggressive sales policy. The township has one of the highest percentages of all-electric homes in the province and last fall celebrated the opening of its 500th all-electric residential unit.

A population explosion in the Ottawa area has sent shock waves rippling across the township and promises a vigorous building program for some years to come. Nepean has long been a leader in residential construction and much emphasis is placed on the building of town houses. Distribution lines for power, phones and television antennae share a common trench in all new subdivisions while the utility is co-operating with the township to erect illuminated street signs, both on subdivisions and at principal intersections.

Nepean Hydro is a young and vigorous utility which must expand even further to take full advantage of its new quarters. But optimism is not one of its rarer traits and nothing bears out the go-go mood better than allowances made for future expansion—an extra 10,000 square feet of warehouse space and provision for a complete third-storey on the office block.

That's how they do things in Nepean.

Nepean Hydro staff me take an admiring look tultra-modern service cultra-modern service cultra-modern service and discuss design in the wappointed boardroom.



balt-60 supply

r of the 306 fuel channels in the Douglas Point nuclear erating station will be utilized to produce industrial-grade alt-60. This source, which is expected to yield its first crop hid-1968, will augment Atomic Energy of Canada Ltd.'s ent supply.

st year AECL's sales of radio-active materials topped six on curies. These were obtained from the NRX and the NRU arch reactors at Chalk River and the United States Atomic gy Commission's Oak Ridge plant.

1966, the Nuclear Power Demonstration generating station olphton was operable at full power 88 per cent of the time.

ecember alone it logged a total of 744 hours.

w fuelling machines, which according to reports could the percentage of availability, will be delivered late this They will be computer-controlled and will incorporate n and testing experience gained at Douglas Point and

on the right footing

ral Ontario Hydro departments have combined their skills oduce a new type of footing for transmission towers. Its use nes scheduled for construction during the next four years pected to save about \$2,500,000.

e new footing is made by pouring concrete directly down igered hole into which a light cage of steel reinforcing has placed. If soil conditions warrant, the bottom of the hole ne enlarged by an expanding attachment on the auger. Until a footing called a steel grillage, which requires a large nt of structural steel, a large excavation and well-tamped fill, has been employed.

ities join forces

e municipal utilities in Essex County joined forces last



t' we sell" is their motto

month in a bold experiment in co-operative marketing aimed at uniform standards and stepped-up sales.

Named COMPEC (Co-operative Marketing Plan — Essex County), the new organization will rent sales and marketing assistance from Ontario Hydro. A six-man advisory committee will establish the best way of dealing with various marketing problems.

Says Jack Anderson, manager of the participating Leamington PUC: "This is the first scheme of its kind in Ontario and I like to think it is the answer to a frequent criticism of commissions that they cannot get together to improve Hydro service throughout the province.

The 12 utilities will work through Ontario Hydro's Essex area office. They already have an outstanding record of co-operation and for the past three years have been involved in a joint advertising scheme over local radio stations. There are 32,000 municipal and Ontario Hydro customers in the

Signing ceremonies for COMPEC were held in Leamington. Shown seated are Ontario Hydro's Western Region manager G. M. McHenry and Essex Area manager J. J. Durand. Left to right are the chairmen of the signing utilities: K. W. Robertson, Wheatley; J. E. Drouillard, Tecumseh; L. Cecile, Sandwich West; L. F. Johnson, St. Clair Beach; R. B. Leslie, Leamington; R. H. Graham, Kingsville; L. F. Ounsworth, Harrow; Ernest Moyes, Essex; Stuart Folster, Cottam; F. Preston, Comber; H. Catton, Belle River; and L. F. Duby, Amherstburg.

Manager retires





A. W. H. Taber

Evald Ounpuu

Fort William Hydro's General Manager A. W. H. Taber has retired after a distinguished 40-year career in which he has served as president of the Association of Municipal Electrical Utilities and twice been president of the Electrical Utilities Safety Association.

Mr. Taber started work in 1928 as an engineer with Ontario Hydro. He became area manager at Sudbury and later manager of North Bay Hydro. He took over at Fort William in 1944.

Announcing the retirement, Fort William Hydro Chairman J. R. Aiken said: "The excellence of service offered to our consumers and the provisions which have been made for our future development are in very large measure the direct results of Mr. Taber's administrative ability and foresight."

A dinner honoring Mr. Taber was attended by commissioners and employees of Fort William Hydro, civic representatives from Port Arthur and Fort William and a group of utility executives headed by Ontario Hydro First Vice-Chairman D. P. Cliff.

Mr. Taber has always been active in community and church affairs and is a past president of the local Rotary

Club, past president of Fort William's Red Cross Society and a former director of the Chamber of Commerce. He served six years on the board of McKellar Hospital and is currently a member of the Salvation Army's advisory board and an elder of Wesley United Church.

Succeeding Mr. Taber is Estonian-born Evald Ounpuu, the utility's engineer since 1963. Mr. Ounpuu was educated in Sweden and Canada, gaining his engineering degree at the University of British Columbia. He belongs to local branches of the Association of Professional Engineers of Ontario and the Engineering Institute of Canada and is a deacon of the First Baptist Church, Fort William.

Fort William Hydro's accountant and office manager, D. E. Shipston, also steps up to become treasurer. Mr. Shipston emigrated from England in 1958.

The Century is launched



Champagne for a coal carrier.

Mrs. George E. Gathercole, wife of Ontario Hydro's chairman, broke the traditional bottle of bubbly over the bows last month as she named the 730-foot Canadian Century, which will carry coal to Ontario's thermal-electric power stations. The ceremony, at St. Catharines, was attended by several hundred marine, government and business leaders from both sides of the border

The new laker will be able to carry 25,000 tons of coal and unload itself at a rate of 4,000 tons an hour. This is the third coal carrier built at Port Weller Dry Docks for Upper Lakes Shipping Ltd. The others are the Cape Breton Miner and the Ontario Power. A fourth vessel will go into service next year.

Mr. Gathercole, who spoke at the commissioning, noted that although Hydro purchases all the coal it can get at competitive prices from Canadian sources, it still must pay a discriminatory duty of 50 cents a ton on coal imported from the United States.

"Last year this tariff added \$2,204,577.35 to the power bills of Ontario consumers, and I use this precise figure because we worry about pennies," he said. He added that new Welland Canal lockage charges would add an estimated \$400,000 a year to the cost of coal by 1970.

Aladdin's on the road

Operation Aladdin, a display of outdoor lighting now touring the province, visited Peterborough last month when the local utility hosted a dinner and tour in connection with the event. About 130 persons saw a slide presentation by Jack Thompson, supervisor of lighting for Ontario Hydro. and later boarded buses for a trip around the city.

Guests saw a school, two churches and civic buildings

bathed in light, but the faces of officials turned red embarrassment when a line feeding part of the city four lighting installations failed. The tour returned t area after power was restored.

municipal briefs

Alfred's pretty hot on electric heat. Alfred's a small Fre speaking community 60 miles east of Ottawa and 11 d dozen homes built there last year are warmed with el baseboard convectors. Alfred's a Hydro municipalit

St. Catharines PUC is buying a two-storey building land next to its present office. While some staff will next door, the land will be used for any future expa of the existing PUC building.

Orangeville is experiencing a building boom and construction includes an all-electric subdivision to co nearly 400 homes. But Orangeville Hydro Chairman Johnson says that industrial growth is largely respon for major new loads. Each new resident to the town of letter of welcome from the chairman and two 100

Veteran commissioner Gordon Klager has notched u years with Fonthill Hydro. A party and presentation held to mark the event.

Newcastle PUC Manager H. S. Britton has retired more than half a century of electrical experience. He stay on for a while to assist his successor, Tom Messe Raiph B. Chandler, who served as manager of the Arthur PUC from 1935 to 1954 and then as a commiss from 1956 to 1961, has died at the age of 77. Mr. Cha held many offices over the years, including chairmar of the Lakehead Harbor Commission and the Port A Parks Board as well as being president of the Thunde Red Cross Society.

Welland Hydro general manager Reg Turton has elected chairman of the Niagara International secti the International Electrical and Electronic Engineers

Ernest F. Reid, 80, a former superintendent of Peterbo Utilities Commission, died recently. Mr. Reid retired the PUC in 1955 after 47 years of service.

Sarnia Hydro is studying the possible use of its po a cable television company. The company proposed a of 20 cents a month per 100 feet of cable. However, ager Charles Phelps points out that in Guelph, wh similar system is in effect, the local utility charges \$3

At Niagara Falls a 450-page book is taking shape th give a comprehensive history of the city. Volunteers put in more than 10,000 hours on this project ' Stamford Kiwanis. The book will trace the story of h electric power as well as that of the city and falls. On pletion it will be presented to the local library.

Ajax Hydro supervisor John C. MacKay, 55, died taking part in a recent hockey game. Members Hydro staff were playing a team from the town's Department.

According to local press reports, a study conducted Bowmanville council committee has recommended t law establishing the town's PUC be repealed. It calls commission to be integrated with the town authori

land Hydro has switched to an IBM punch card billing tem for its 12,000 customers. Bills and statistics are cessed by the IBM service in Hamilton. Other phases ting to the billing are done at Welland. The utility's surer, A. E. Andrew, says their old equipment, which udes an NCR 2000 billing machine, addressograph thine, cabinets and tub trays for accounts receivable its, is available to any interested utility at nominal cost. Lelon Falls Board of Water, Light and Power is negotiate a cost co-operating contract with Ontario Hydro that enable them to buy power at a cheaper rate. The ge operates its own power station and will continue to be but for some years it has supplemented the supply a power from Ontario Hydro.

dsor Utilities Commission is to cut costs by integrating lectricity and water bills. "Our ultimate goal is that hydro water accounts be read at the same time and billed on same bill," says the general manager, Glen Fisher. The

ngeover will take about 18 months.

tricians at Blind River have formed a local chapter of the ario Electrical League, with Dick Timmermans as presi-

ton PUC's chairman George Cook received a pat on the afrom the Galt Evening Reporter last month. What with an age of five hours a week "homework," attendance at all mission meetings and participation in other electrical nizations, Mr. Cook has turned his post into a full-time tion, says the report.

icipal utilities, together with manufacturers, dealers and rio Hydro, are featuring the use and advantages of ric dehumidifiers. The promotion will last through May, and July and is part of the Electrical Modernization ram. Dehumidifiers protect home furnishings by extractummer moisture from the air.

IEA fetes new head



ctor gets a gavel.

officials from across Ontario met in Dundas last to honor Dr. J. D. Fleming as new president of the Municipal Electric Association. During the presidenter, Ontario Hydro Chairman George E. Gatheresented Dr. Fleming with a gavel and AMEU presidented of Stacey gave him a book of memory.

Gathercole said that the new president "exemplifies ro tradition of public service which goes back to the years of this century." He said that Dr. Fleming's of service supported the belief that a responsible owes something to his community.

ing Dr. Fleming's personal life, D. P. Cliff, Hydro's

first vice-chairman, remarked that the new president's late father had been a commissioner for many years in Watford. Mr. Cliff is shown addressing Dr. Fleming.

Replying to the tributes, Dr. Fleming reviewed the growth of public power in Ontario and the role played by the OMEA. "It may be hard to get excited about a service so well provided that it can almost be taken for granted. But try to get excited, just a little bit, because Hydro is yours," he said.

University post



Dr. Richard L. Hearn, former chairman of Ontario Hydro, has been elected chancellor of Brock University, St. Catharines. He was active in the university's establishment and is an original member of the Founders' Committee.

As chancellor, the 76-year-old engineer will preside at convocations, admitting all students to their degrees. He will also serve as an ex-officio member of the board

of governors and the senate.

Dr. Hearn first joined Hydro as a design engineer in 1913 and in succeeding years served as executive assistant to the chairman and as chief engineer — design and construction. In 1947 he was made general manager and chief engineer, then served as chairman from January, 1955, to October, 1956. The coal-fired generating station on the Toronto lakefront was named in his honor.

Dr. Dobson dies



Dr. Percy Dobson, 81, who retired in 1955 as Ontario Hydro's director of research, died April 9 after a brief illness. He earned a distinguished reputation as a scientist during his 41-year career.

Born near Georgetown, Dr. Dobson graduated from the University of Toronto in 1911 with a B.Sc. and obtained his master's degree four years later.

As chief testing engineer and later direc-

tor of research, he was responsible for the organization and development of the Ontario Hydro laboratories. Under his direction the original staff of seven grew to about 300, increasing the range of work from testing lamps and high-voltage insulators to tackling the wide variety of electrical, structural and chemical problems studied today.

Dr. Dobson formed Hydro's electrical inspection department early in his career and originated the safety testing of electrical appliances in this country. Hydro named its new research centre after him when the division relocated in Etobicoke in 1961.

Pickering doubles

Ontario Hydro will double the size of its Pickering nuclear generating station near Toronto to more than 2,000,000 kilowatts, making it the second largest nuclear plant now under construction in North America. Total cost of the four-unit station is estimated at \$528 million.

The first unit is due for operation in 1970, and the next three are tentatively scheduled at the rate of one a year until 1973. With all four units in operation, Pickering will be capable of serving 1.8 million households.

Hydro has also announced a contract worth nearly \$20 million for two steam generators at the new fossil-fuelled Nanticoke power plant on Lake Erie. Babcock-Wilcox and

Goldie-McCulloch, of Galt, will build the two steam generators while options have been taken on two more to bring the station's eventual capacity to 2,000,000 kilowatts.

Top hat winner

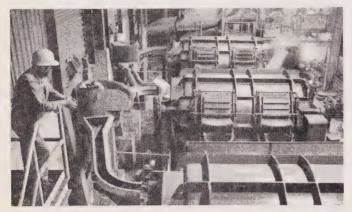
Ontario Power, the big ship which carries fuel to Ontario Hydro's coal-fired generating stations, scored a double 1967 Great Lakes record. The vessel was the first to clear Port Colborne into the ice fields of Lake Erie and, on the return trip, the first eastbound ship to enter the harbor.

For Captain G. H. Davies it meant receiving the traditional top hat from the Port Colborne Jaycees. The feat was accomplished April 1 when the Upper Lakes Shipping carrier cast off her winter moorings in the outer harbor and headed for Conneaut, Ohio, to pick up the first of many loads of coal she will carry to Toronto this season. She returned on April 3 bound for the Welland Canal.

No smoking

Canada Iron Foundries Limited have replaced a coke-fired operation with electric furnaces at their downtown Toronto plant. The change is expected to contribute to cleaner air in the city's business section.

Carried out by Canada Electric Company, the new installation consists of two 23-ton melting furnaces and three



Coke loses to kilowatts in this Toronto foundry.

holding furnaces, shown above, with a capacity of 44 tons. The melting furnaces each have a connected load of 4,100 kilowatts and the holding furnaces 1,000 kilowatts.

The furnaces are used to melt and refine scrap iron and steel from which the foundry makes pipes and other products. Preliminary work began in September and the furnaces went into operation last month. The units are expected to eliminate smoke, increase output, produce savings and permit push-button operation.

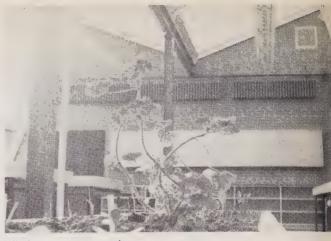
Toasting dinosaur tootsies

Keeping dinosaurs' toes, or at least toeprints, warm can be troublesome during the Connecticut winter. However, the Hartford Electric Light Company solved the problem electrically.

The 180-million-year-old tracks were uncovered last year, but before all the 2,000 prints were excavated winter had set in and halted operations. There was a danger of frost cracking the earth and obliterating the prints.

After many suggestions, including one of flooding the area, the company recommended covering the ground with electric ceiling cable. Plastic sheets were placed under the cable and sand and sawdust on top with a final covering of plastic. The temperature was maintained at 35 degrees.

Room with a view



Windows are at a premium

There's more to this modern, spacious greenhouse than the eye . . . it's one of the few classrooms in the newly-c Belleville Centennial Secondary School that has windows.

Not that the 460 students already using the \$4 million by have to study in the dark. On the contrary, their classroo brightly-lit by fluorescent lights set flush with the ceilin school, designed to accommodate 1,350 students, is ai ditioned and winter warmth is provided by electric h coils.

Banking on automation

Britain's Midland Bank is planning what is claimed to world's largest and most advanced computer banking s Pairs of computers will be installed initially in London, Lee Liverpool and all branches will be linked to these com by early 1971.

The system will enable a customer to use any branch were his own. All accounting will be done on the spot, disp with the need to up-date records at the end of a day's bu The bank says the computers will help keep banking c down while offering more services to the customer.

Horsehides and gold

Hydro-electric power was helping to gouge gold out of thar hills" before the turn of the century, according to w hear from California. Apparently, a primitive power plan penstocks made of rivetted horsehide, began feeding fourteen miles to the mountain mining town of Bodie ! 1893.

But the world's first instance of practical power transi probably occurred right here in Ontario - a tiny hydroplant was built on the Credit River in 1888 to serve pap in Georgetown.

March energy production

Primary energy provided by Ontario Hydro in Ma totalled 4.52 billion kilowatt-hours, an increase of per cent over the same month a year ago.

For the first three months of 1967, the total is billion kilowatt-hours, up 8.4 per cent over the s period last year. Adjusted for seasonal influences, prir energy demand in March was 4.2 billion kilowatt-ho 1.6 per cent less than the previous month.

The seasonally adjusted total for March repres 50.41 billion kilowatt-hours at annual rates. This is 36 per cent of the energy demand in 1949



ng just returned from a fortnight's sojourn e Fort Lauderdale-Miami section of Florida, ced by a dollar we invested in a lucky draw the proceeds of a fatal Caesarean performed some reluctance on our partially pregnant y bank, we feel obliged to share some of the

hat's that you say — old stuff? Spare us the is?

lights with our readers.

mewhere in this cold, cloudy, windswept nce of ours — perhaps in Apple Hill or the e Village of Otterville — there dwells a man has never been south and it is to him our rks are directed. It will be enough if, gh these columns, we can bring him someof the color, gaiety and warmth of the nine strip as it appeared to us.

or with us, then, as we whistle through the ng skies at better than 600 miles per hour ry, if you will, to imagine our consternation, and delight at the spectacle which greeted on disembarking at Miami's bustling internal airport. Lo and behold, the place was with electric light.

far as we could determine, a gaseous arc e was employed pretty generally throughhe building, effectively integrated with a gurated and perforated plastic ceiling ma-Employing the flux-of-light method of sing the level of illumination, we found it on the order of 100 footcandles — well I.E.S. standards for that sort of institution.

ther feature of this a-go-go airport which larly impressed us was an electronic ne for analyzing handwriting. Dozens of were lined up reconfirming the high n they held of themselves for only a quarter e marvelled anew at the versatility of elecas we boar ded the limousine and prepared or the strange and heady sights and sounds stally new environment.

as 20-odd miles to the hotel and mercury all the way. Yes sir, a finer display of what's

new in street lighting would be hard to find and we entertained ourselves for the length of the journey theorizing on the most economical and efficient cleaning and maintenance procedures that might be employed — always bearing in mind the geographical factors and probable level of air pollution. But the best was yet to come.

Less than five miles from journey's end, man and nature had combined to create a scene which will remain forever etched in our memory. In the light of the subtropical moon, with palm trees waving in the foreground and the broad Atlantic for a backdrop, stood the tall stacks and lacy network of bus bars and transformer bushings identifying the oil-fired Lauderdale generating station of the Florida Power and Light Company.

What visions this evoked and a thousand intriguing questions demanded to be answered.

How, for example, did they excite the generators and what was the superheater outlet pressure in psigs? Did the rise in temperature of the water discharged from the condensers have any appreciable effect on the local alligator population? Are coconuts useful as a low sulphur fuel for days when the wind is in the wrong direction?

Relishing the prospect of many happy hours digging for the answers to these and other intelligent questions, we slipped off to sleep that night with the ocean serving as Sandman.

Consciousness returns slowly to us of a morning, some say much too slowly, but as it grew stronger we became aware that the soft sea air was alive with melodious sound — the song of a hundred exotic birds raised in appreciation of spring. Birds, we reasoned even more slowly than usual, do most of their singing from a perching position, and for this they often use wires.

Springing to the window, we threw open the sash and had our fondest hopes confirmed. Strand after strand of gleaming 4/0 ACSR conductor swept past our window in a breathtaking example of modern distribution practices and we could tell at a glance that these primaries carried 13,000 volts if they carried a micro-farad. Ho ho, we chortled gleefully, here were chaps who recognized that the drop in voltage in a line varies inversely to the square of the voltage and with two or three more ho hos for good measure, we prepared for some rare sport.

Armed with a beach towel, sketch book and field glasses, we followed the lines down to the beach, pausing only on two or three occasions to examine some rather unusual potheads. And our luck held.

From the beach we could see one of the most interesting pole specimens it has been our good fortune to behold. Bearing aloft a transformer of not less than 50 kva capacity, this beauty was criss-crossed with cross arms and laden with insulators, brackets and assorted hardware to such a degree that a detailed study could in no way be resisted.

Our joy was short lived. Scarcely had we hoisted our glasses (field) into position than the interference commenced. Puzzled at first by the appearance and re-appearance of twin, coneshaped objects we mistook at first for pin insulators, one can imagine our chagrin at finding they belonged to a procession of curvaceous young ladies in topless bathing suits which was

constantly intruding upon our field of vision. No sooner would we begin to get the feeling and significance of the pole's configuration when another bouncing bosom, dimpled tummy or cheeky posterior would block out the object of our affection.

Downcast and disillusioned, we made our way back to the hotel where it took the best part of a day curled up with an unexpurgated edition of the AMEU's Guide to Overhead Construction (Part II) to regain our good spirits.

A highlight of the whole southern adventure was a side trip we were able to make to Grand Bahama, one of the hundreds of islands in this group which has been granted independence within the last few years. The stranger to this lush paradise of sun-drenched shores and coral seas is at once impressed with the efficiency and lack of disruption to essential services which have accompanied the change to local control.

During our brief stay the electrical supply appeared steady and adequate, but just to make sure we eschewed a scheduled trip to the casinos of Freeport to carry out a voltage check. Even with the crude instruments at our command we were able to verify that voltage fluctuation was well within acceptable limits and, even more significant, we are prepared to wager that the average kva per mile is relatively satisfactory.

In all fairness, though, we cannot recommend the Bahamas to devoted pole-watchers. The same titillating interference is prevalent and while more of the young ladies appeared to sport British accents, their diversionary equipment was essentially the same as that employed by their sisters in Florida. One slight difference we might point out was to be found in the umbilical cord knotting practices of the two countries. With their long navel tradition, though, we'd be inclined to give the nod to the British.

And so we took reluctant leave of our friends on the islands. Their friendliness and refreshing naivety as they came down to the ship to wave goodby will long be treasured. With lei floating on the blue waters and the haunting strains of guitars wafting softly on the tropical breeze, the ship slowly put to sea.

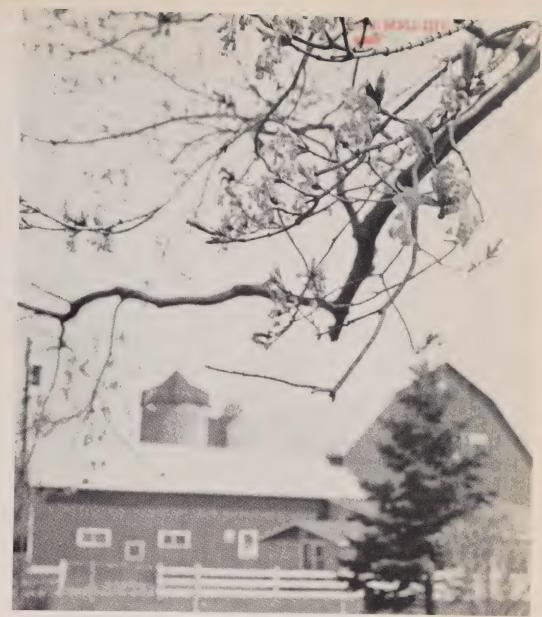
Only then, through the revealing eyes of our trusty field glasses, did the horror of the situation strike home. The musicians, their feet unprotected on the damp, white sand, were using two-pronged plugs with their electric guitars.





anyone for the moon?

We'll settle for Montreal and Expo '67 where this automated factory is featured in the theme pavilion "Man the Producer". It sumultaneously assembles television sets and camera projectors on two production lines. Come to think of it, Ontario Hydro is co-sponsoring the "Resources" section of this pavilion and it's well worth a visit any way you look at it. You're going in the other direction? Then take time out to see the Hydro Hall of Memory at Niagara Falls. Or be a real devil and take them both in. After all — it's Canada's 100th birthday.



ontario hydro news

June 1967

dragstrips and hayfields

metamorphosis on the madawaska

newmarket sees the light

PERIODICALS CEPT UNTVERS



Ontario hydro news june 67

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Changing scene on the Madawaska 18

the cover

Spring has come and gone on this Norfolk County farm more than 160 times but the farm's equipment and methods are as modern as tomorrow. Over the years, Braeside has changed from a self-sufficient general farm to a highly specialized dairy operation. Owner Charlie Haviland, who personifies the new breed of farmer, talks about Braeside, commencing on the opposite page.

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Looking much like the leftovers from a mammoth spaghetti party, to surplus cable await disposal at Hydro's service centre. Surveying the situ are Lew Hartman and Jack Lochhead of Surplus Sales — the depart responsible for Hydro's big surplus operation.

Scrap copper is the biggest revenue producer but sales are rung up I larly on items ranging from felt mattresses to line trucks and from coffee to Bailey bridging. Right now you could pick up a one-owner, 150-tor crusher for a song. More details are on page 12.

two hats for charlie

by Les Dobson



s spinning furiously, driver Charlie Haviland he accelerator. Within seconds he's streaking the strip at 100 miles an hour. Seconds later outhing 160. Already he's beyond the red quarter-mile and a parachute cracks checking his supercharged progress.

typical weekend of drag racing for this lean ualist. Monday will be typical, too.

He'll be up at 5.30, washed and dressed in three minutes flat and out milking the cows. For Charlie Haviland is also a farmer . . . one of the new generation.

"I love speed," says the 32-year-old father of two children, who finds flying too slow yet paradoxically spends much of his life on a tractor. He certainly doesn't fit the traditional mould as a farmer, but he's a successful one nevertheless. Awards in the dairy of 150-acre Braeside Farm, near Waterford, testify to that.

Charlie's herd of Holstein Friesians is one of the best in Norfolk County. On the wall hang citations and certificates of merit. His 27 cows yield 1,200 pounds of milk a day, rich in butter fat. And because he uses all the electrical and mechanical aids at his





he's right at home on a tractor or a dragster

disposal, Charlie can do it with the help of only

"If I didn't modernize, I'd spend every last minute in the barn and fields," he says.

Braeside has seen six generations and a revolution in agricultural knowhow. The farm was recently awarded a Century Farm sign by the Ontario Junior Farmers Association showing that it has been worked by the same family for at least 100 years. It was, in fact, established in 1803 when United Empire Loyalist John Haviland left 200 acres of what is now Manhattan ("I wouldn't mind that land at today's values," says Charlie) and headed north.

John Haviland the First brought 400 acres of Norfolk County under cultivation, although the land was later divided into 100-acre parcels. Charlie's father purchased an additional 50 acres to bring the farm to its present size.

The farmhouse itself is square and solid with spacious rooms, high, elegant ceilings and fine hand-carved woodwork. It was built by another John Haviland, Charlie's great, great grandfather.

The Havilands are somewhat of a local legend. The first John Haviland died leaving \$12,000 buried in the ground and no one's sure whether it was ever found. He also loaned Hamilton \$16,000 for a courthouse.

Farming was different then. The farmer was self-sufficient, growing and producing just about everything necessary for survival. He depended on horsepower and the strength of his own broad back. His wife baked bread, operated the churn, collected the eggs and cooked for an army of hired men.

It was Charlie's father, Charles Clayton Haviland, who took over in 1926 and started the transition from general farming to a highly specialized dairy operation. It was he who pioneered the herd of purebred Holsteins and prepared the farm for an uncertain and changing economy.

"Dad was ahead of the district with almost everything new," says Charlie. "He was the first with a rubber-tired tractor and the first to have a tractor grain-binder. Even so, I can remember four of them running the farm — Dad, his brother and two other men.

"All the neighbors came in at threshing time and haymaking. But things have changed and today's farmers are independent. They work together only if someone is hurt or there's been a fire. When Dad died two years ago everyone helped draw in the hay. And they did it in one day."

There's little call now for the wife to do farm chores and city friends are constantly surprised that Charlie's wife, Marilyn, can concentrate on being a housewife. "I keep telling them I'll put a churn in the kitchen just for effect," she says, but it would certainly look out of place among her modern electrical appliances.

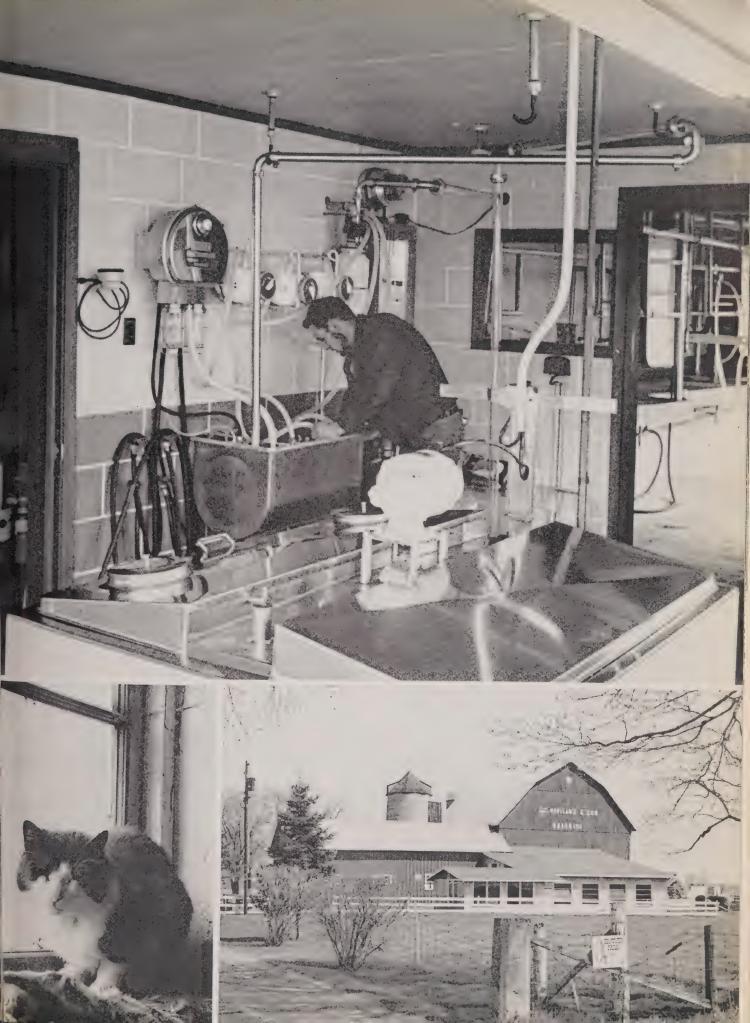
In addition to the milk herd, Charlie keeps two bulls and about thirty calves, again all Holstein

Where there are cows, there's milk and where there is milk, there's a contented cat.

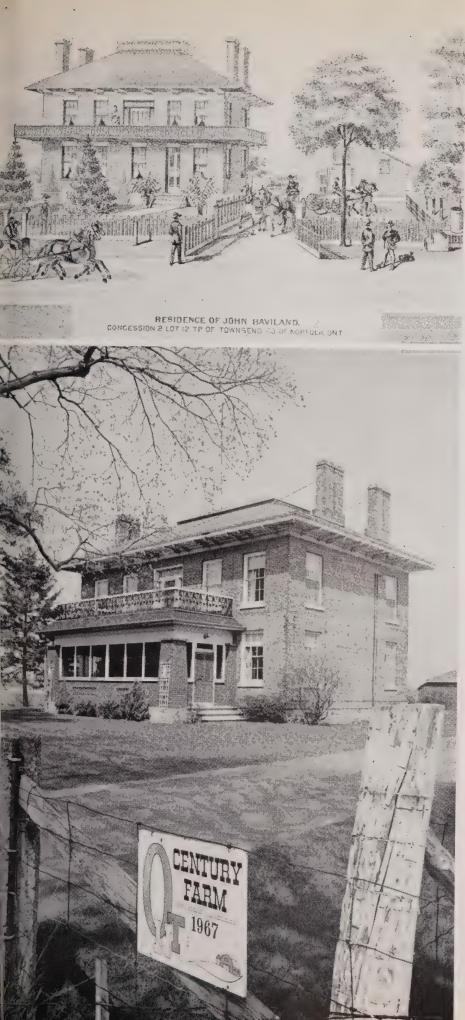
But apart from this traditional fixture, everything's up to date particularly Braeside's milking parlor. Charlie Haviland is especially proud of his highly productive Holstein herd.











Friesians. He feeds the animals on hay, oats and corn grown in the fertile sandy loam that characterizes the area just north of Lake Erie. He doesn't grow tobacco, although it's a major crop just west of Braeside Farm.

Pride of the farm is a new airy and gleaming milk parlor equipped with four stalls, one for washing down the cattle and three for milking. Feed is automatically piped forty feet from a hopper in the barn, the operation being triggered by a micro-switch in the end stall.

"Cattle are cagey creatures," says Charlie.
"They'll come into the parlor only if they know
there's something to eat. We had a man once who
thought it was a waste putting feed in the washing
stall, and we had one heck of a job getting the
cows in."

Electric heating cable is embedded in the floor of the parlor's lower level to provide warmthforthe operator and to help keep the floors dry and clean. A thermostat maintains the temperature at a constant 55°. Cows leave the parlor by a ramp, also heated by 500-watt cable. The walls of the adjoining milk room are built of colored concrete blocks and lighting throughout the building is provided by fluorescent fixtures.

Electric milking units meter the milk before pumping it into a one-ton capacity cooler. The milk is picked up each day and shipped 80 miles to a Toronto dairy by a truck owned by a consortium of eight local farmers, of which Charlie is a member.

And Braeside is expanding. "It's poor economy operating a modern milking parlor for only thirty cows and we're going to increase our efficiency by adding another fifteen cattle in the next year or so," says Charlie. Foundations for a new barn have already been laid.

Braeside has evolved steadily over the years. Its original barn was burned down 75 years ago but others have been built, bits added. The fire couldn't have come at a worse time — Charlie's grandfather lost his arm in a cutting box that same year.

There have been good times and bad, but the farm has survived to become typical of the modern, small and progressive holding. Tractors and trucks now replace restless and stamping horses. The farmer does his work with a minimum of human assistance and sweats almost as much over his records at night as he does in his fields by day. Electric power is universal.

With its help, Ontario's farm productivity has continued to climb despite a decrease in cultivated land and a 35 per cent reduction in the agricultural labor force in a decade. Over the same period the amount of electric power used by the province's 134,000 farm customers has nearly doubled.

The economics of low-cost power have enabled many historic farms to see Canada attain her first century as a nation. If fast-moving Charlie Haviland has anything to do with it, Braeside and its dairy herd will prosper well into the second.

A contrast in styles, these photos show the Braeside farmhouse as it used to be and today . . . Charlie Haviland on the drag strip and driving a more sedate tractor . . . standing with wife Marilyn before a picture of great grandfather which occupies a place of honor in a home filled with modern conveniences.

new light on Newmarket

Two excellent road shows played the town of Newmarket last month. One was the Centennial Caravan, the other Operation Aladdin, One illuminated Canada's first century, the other some of the town's more impressive buildings.

While Operation Aladdin won't log anywhere near the mileage of the caravan, seven Ontario municipalities will this year provide a backdrop for the seven tons of equipment used in the "after dark" presentation. The outdoor lighting show is enjoying a 13 to 18-day run at each location.

At Newmarket, 15 buildings were bathed in Aladdin's glow to show local businessmen. homeowners, civic officials and others what a difference a ray makes. Installations ranged from a \$300 job at the local Legion Hall to an elaborate \$1,200 array at St. Paul's Anglican Church.

In the case of the Legion, a fresh coat of paint on the stucco exterior gleamed under the rays of three 1,500-watt quartz-iodine fixtures. At St. Paul's, six 200-watt sodium-vapor lamps were set at various angles to show the church at its best. The cost of floodlighting varies greatly,

depending on such factors as the degree of brightness required, highlighting and even the type and color of building surfaces.

How did Operation Aladdin originate? Well, it has grown over the last two years like Topsy. It began as a request for an outdoor lighting display at the AMEU 1965 summer conference in Kingston. And it proved so popular that a committee representing four equipment manufacturers and Ontario Hydro was formed to expand the idea.

The result was that last year the display visited five municipalities. Equipment for the show is supplied by nine manufacturers while responsibility for its installation falls to Ontario Hydro and the local utility. Starting off with less than four tons of fixtures, Aladdin has almost doubled in weight and is now valued at more than \$7,000.

The Newmarket stop was typical of visits to other municipalities. Billing itself as the "Hub of York County", the town was a natural location both from a geographical standpoint and because it is the county seat.

Although the 110-year-old community is within easy commuting distance of Metro Toronto, there is still a high percentage of the 9,000 population living and working within the town's limits.





aladdin was

Setting up the Aladdin equipment is done with both speed and care.

Newmarket Hydro Chairman F. S.

Thompson and Manager Jim Beadle, top left, look on as Barry Hamilton,

Ontario Hydro lighting representative, makes a final adjustment. At other locations, pole connections are made, mushroom garden lights anchored and ground fixtures unloaded. Then all the cartons have to be stowed.



Newmarket has always seen itself as an independent business centre north of Toronto (that's how the name originated) and many industries have established there.

Two of these, Tenatronics and Deerfield Plastics, were lighted by the magic of Aladdin's lamp - in this case mercury and sodium vapor.

Requests for the display are relayed from municipalities through Hydro's regional offices to Jack Thompson, supervisor of Hydro's Lighting Services. At an early meeting with the utility manager and his sales people, about 20 sites are tentatively selected for lighting. This list is whittled down to 14 or 15. It will include at least one church, a school, a public structure, several commercial buildings, and one or more displays of garden lighting in parks.

Two departures from the norm at Newmarket were lighting of the town's water tower and the Armitage transformer station. The latter was the result of some good-natured ribbing at previous displays to the effect that transformer stations were usually kept in semi-darkness.

Between each show, a week-and-a-half is needed to dismantle, pack, move, re-assemble and install the floodlights. Men doing the Newmarket installation found it was not without hazard - at Pickering College, they were water-bombed from the second floor by high-spirited students.

When all the equipment is set up, Operation Aladdin is promoted through a series of teaser advertisements with such themes as "We're painting the town with light" and "Come stroll with us". But the show isn't officially underway until after a dinner and bus tour for business and civic people is held. It's hosted by the local utility, equipment manufacturers and Ontario Hvdro.

As part of the dinner program, Mr. Thompson presents a slide-illustrated talk on architectural lighting. He focuses attention not only on the outstanding installations but also on those falling short of the mark. He recommends improvements and points out how low-cost floodlighting can enhance a building's image.

Is it all worth it? Does Operation Aladdin really make an impression? Well, so far, two-thirds of the installations made in a string of cities and towns have been ordered on a permanent basis when the show moved on.

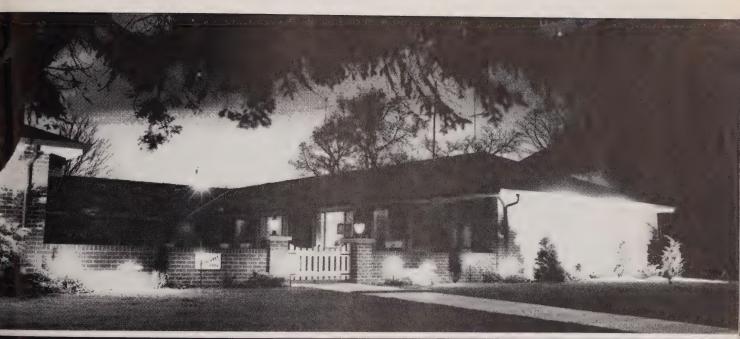
To be welcomed as a permanent citizen on first sight, Aladdin has got to be good.







Coming alive under Aladdın's glowing lamp are the local utility building, ranch-style apartments, Newmarket's water tower, Pickering College and St. Paul's Anglican Church. Floodlighting similar to that of Aladdin is going to be installed permanently at the water tower.







at Expo it's Ontario

Grandma Ontario put on a miniskirt for her Expo appearance and she's been bringing down the house with a real swinging performance ever since the curtain went up. People are talking, of course, but any girl likes compliments and she'll go on kicking up her heels until the last wolf whistle is stilled at the end of October.

Staid old Ontario, as they used to say, has come up with one of the fastest-moving, ingenious and crowd pleasing presentations of the whole exposition and she's in pretty sophisticated company. Located on Ile Notre Dame, the pavilion covers an area of 60,000 square feet adjacent to the Canadian and Quebec pavilions. It's fifth largest at Expo but would stand out at half the size in any crowd.

Topped with an angled roof of pyramid shapes constructed of glass, wood and steel, which soars to 90 feet at its highest point, the Ontario pavilion's exhibit area is raised 18 feet above a site landscaped with 40-foot trees and giant, rough-hewn granite blocks.

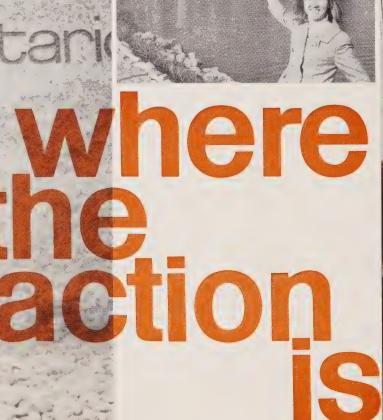
Inside, where the action is, it's people who tell the story. With entertainment values always given precedence, 17 exhibits artfully capture the mood and character of the province. They range from an amusing children's interpretation of the environment on canvas to the "teen scene", a from the world of industry and finance to a pl which robots hold forth on the subject of caree

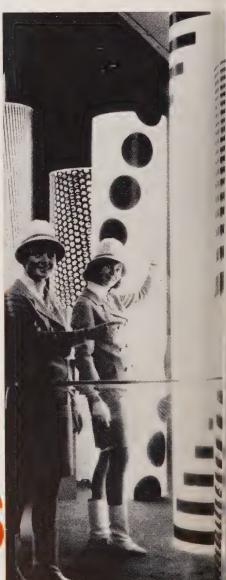
Culminating in a 570-seat theatre where visiting enjoy a totally new experience in the art of mulpictures, the sleek and professional Ontario presentation employs all the latest visual, soul and graphic techniques available.

Typical of the entertaining fare is the play performed by five animated figures representi broad career classifications. Mr. Business, Mi Science, Mr. Sport, Miss Arts and Letters and Mr. Skilled Labor are hidden from view by the cylinders in which they are housed. When the play begins the cylinders disappear into the floor and the figures begin to move and talk a careers for young people.

A sixth character might also be accorded star billing in this performance and throughout th Ontario pavilion. Unobtrusive but versatile electricity plays a hundred important roles.

Electric motors and pneumatic systems animathe robots in the play on careers. A taped nar provides the cues and a separate programme





ols the entire sequence by means of photo-

ner example of how electronics has been tively employed in display is a plastic "map" uring about 10 feet by 15 feet and weighing ons. On picking up an earphone, visitors sten to a recording relating to settlement rns of the province from the earliest explorers's to a projected settlement for 1971.

e listener hears how Champlain entered the nce, a series of tiny lights follows his route and in areas light up or increase in color sity as one learns of the population increase change. Water routes and railroads come as the story is told of their important role.

icity and its contribution to the development s go-go province is itself the star of the er play" exhibit. Focal point of this display Sir Adam Beck "circus", which has been d for the occasion by Ontario Hydro.

dam, first Hydro chairman, devised the idea avelling caravan to demonstrate the benefits ctricity to farmers in a day when electricity ust beginning to gain wide acceptance in and towns. Bearing its authentic 1912 e plate, the truck shown at the pavilion nanufactured by the Autocar Company of cylvania. Power for the electrical appliances it

carried could be generated by the truck itself. Six carbon arc lights from the Hydro collection add another period note.

Flashing light strips show at a glance how electrical consumption has grown in Ontario over the years and color divisions indicate the growing proportion of power being produced from coal and uranium.

And nuclear power has its own exhibit in the Ontario pavilion. It begins at ground level where the orthombric crystal structure, symbol and atomic number of uranium are drawn on a granite block. An open steel framework extends up through the pavilion and supports picture panels describing the early history of nuclear development including CANDU, Douglas Point, the Ontario power grid and Pickering generating station.

The section on Pickering includes a working scale model, 13 by 8 feet, which is a joint undertaking of AECL, the Provincial Government and Ontario Hydro. The reactor, heat exchangers, steam line, generator and transmission lines are animated by lighting and five text panels pop up one by one to explain the sequence.

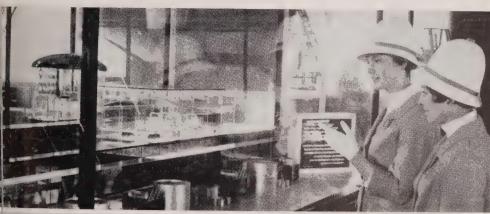
Several of the displays depend heavily for their effectiveness on the subtle and ingenious

application of lighting techniques and the use of light throughout the pavilion is one of its features. The lighting was undertaken by Hydro.

Projected on a 66 by 30-foot screen, the 65 mm film terminating the pavilion theme runs only 17½ minutes yet manages to include virtually all aspects of the Ontario scene. Involving a complex new technique, this multi-image film is the end result of two years of work including the shooting of 200,000 feet of 35 mm film. Six-track stereo sound accompanies the picture.

Something of a dark horse in pre-Expo speculation, the Ontario pavilion quickly became a favorite as post time approached. Off to a good start it will be among the leaders when they come to the wire.

Hydro and the role of electricity in provincial development are much in evidence at the swinging Ontario pavilion. In addition to contributing the sophisticated lighting employed throughout, Hydro loaned the Sir Adam Beck "circus" and co-sponsored a giant scale model of the Pickering nuclear-electric project.









boiled feathers and bent sticks

Although the golfing season is now well und way, many of us are still hooking the ball ar our necks or breathlessly belting turf into the middle of next week.

Of course, the discovery that golfers have suf these and similar iniquities for at least 2,000 years brings little consolation. The sad fact is that the game itself has improved beyond all recognition; the skill of the average golfer has

Ancient Rome, in its wisdom, labelled this m mysterious of cults paganica. Then, as now, th basic rites consisted of a lusty attempt to know ball to kingdom come with the aid of a bent stick. But what a transition from feather-stuf golf balls and togas to the battery-propelled floodlit fairways and electrically-heated gree of today.

When the Romans romped through Europe t took their bent sticks with them. Somehow t game survived the centuries. The Dutch had a called kolf, but it was to the drone of bagpip and the steady hiss of Scottish rain that moc golf really took shape.

As early as 1457 the game was so popular a the warring Scots that it threatened the prac of archery. It was promptly outlawed in the interests of national security.

only the golfer has failed to improve

rbed parliament proclaimed "that the and golfe be utterly cryit downe and isit". The powers that be, still nocht fid, repeated the edict in 1491: "It is statut paint that in na place of the realme there is futeball and golfe or uther sik unprofitabill

I golfing bug was not to be denied, as as widow will testify, and many a bold, to chieftain continued to take a furtive swipe to one was around. As a result of such its activities the game's popularity grew the 16th century, it was truly a royal ary Stuart, in fact, was observed with club nonly a few days after the murder of her musband.

It the middle of the 18th century were regolf clubs formed and it was nearly a relater that the recuperative merits of the recelebrated in song:

tsh o' powders and o' pills,
tsh o' powders and o' pills,
that a cure for a' his ills,
this o' Innerleven.

tire where lassies bleach their claes,

danies toddle doun the braes, erry golfer daily plays,

enks o' Innerleven.

in and dining received far more attention at these early meetings. A day on the links

was a gay affair, each man proudly sporting the colors of his club. Indeed, the Royal Aberdeen had two uniforms — a red one for playing golf and a blue one for dinner.

The word caddie arose in these formative years and is generally acknowledged to be a Scottish corruption of the French word cadet, a title bestowed on artistocratic pageboys who crossed the Channel in the service of Mary Stuart. Gradually the term was applied to the loafers who ran occasional errands through the streets of Edinburgh and later came to mean a kind of porter. Golfing equipment evolved step by step with the game. Throughout the 18th century clubs were hand-made by artisans at the few golf courses then in existence. One expert planted trees on sloping banks so that the stems grew at an angle to the root and created a natural bend for the neck.

By the first half of the 19th century, clubs had fallen into four classes: drivers, spoons, irons and putters. The game was still played with a leather-covered ball stuffed with boiled feathers, but the introduction from Java of a hard, resilient

kind of rubber marked the beginning of a revolution:

Of 'a the changes that of late,
Have shaken Europe's social state,
Let wondering politicians prate,
And 'bout them mak a wark a' —
A subject mair congenial here,
And dearer to a golfer's ear,
I sing — the change brought round last year,
By balls of gutta percha.

The "featheries" were lively enough. Back in 1836 Samuel Messieux drove one 361 yards. But the "gutty" was smooth, solid and virtually indestructible. It remained popular for half a century. Then came the most dazzling innovation of all, the prototype of the modern golf ball. Nicknamed "Bounding Billy", and patented by one Coburn Haskell, of Cleveland, this consisted of a centre, elastic winding and cover. And manufacturers have been arguing about that centre ever since.

They've tried everything from steel and tapioca to dry ice and even scotch, although many of today's golf balls consist of nothing more exotic than a rubber core filled with water. It's enough to make a true Scot turn up his nose in disgust.

For the canny-minded, this continent's modern golf ball weighs exactly 1.62 ounces, has a diameter of 1.68 inches and has 330-odd dimples each exactly 13½-thousandths of an inch deep. (continued)

Golfing in the 1800s was even more of a free-for-all than on today's crowded courses, if these early illustrations are anything to go by.





The British golf ball is slightly smaller, but weighs the same.

There's nothing to prevent the manufacture of superball which will travel 500 yards or more except that size and weight must fall within th strict limitations imposed by world golf author Although a golf ball leaves the club face at around 150 miles an hour, there's also a limits on velocity.

The reason for these restrictions is simple — t superball would render present-day courses obsolete.

Apart from their decorative value, those dimple have an aerodynamic effect and give the ball much like an airplane wing. A well-hit ball sp backward at between 4,000 and 5,000 revolu a minute. The dimples help to pile air under the ball while sucking it away from the top. This creates a pressure underneath and a vacuum above, causing the ball to rise.

It takes about two weeks to make a golf ball and one prominent manufacturer claims his proundergoes 80-odd different processes. Terrific energy is stored in the elastic winding — encit is said, to lift a 150-pound man two feet of the ground. The core of the ball is under a tot pressure of about four tons.

Scottish immigrants must bear responsibility f bringing the game to this continent and there i evidence that golf was played in both Canada North Carolina in the first half of the 19th cent

It's the Royal Montreal, though, that earns the distinction of being the first club in the New World. It was established in 1873. The Royal Quebec was formed the following year and th Toronto Golf Club the year after that. Since the game has never looked back.

Canada now boasts about 800 courses servin the fanaticism of 600,000 golfers, half of whor in Ontario. As a major sporting industry the game accounts for sales of at least \$25 millio year for clubs, balls, membership fees, clothir professional lessons and other essentials.

Most startling of golfing innovations in the la decade has been the rise of the golf car. Traditionalists may view the chairborne revolu with horror, but these gasoline and battery-powered buggies are definitely here to stay. It is in spite of their prices, which may range from \$850 to \$1,700.

The electrics are charged up overnight simple plugging into the power supply. Many golfer prefer them, arguing that they are quieter, are number of electrics exceeds the gasoline care about 10 to one. At some courses in the Uni States, golf cars are obligatory to speed up the game.

Floodlighting has been introduced so that so courses are as bright at night as city streets, perhaps the latest in golfing technology is the planned introduction at the Banff Springs I course of electrically heated greens. Sharp temperature changes on the mile-high cours have previously meant that the greens were seldom ready before June. Now, cables laid beneath the ground will keep the grass at a co temperature all winter long and enable golfe to tee off in April.

All we need now is a plug-in device that wi improve our swing. \square



SUIDIUS

steel contribute
in 1966.
Since early 196

'lal O'Neil

th narket for a small diesel locomotive or a / qzen plain face cloths? Perhaps you'd prefer or nercial dough mixer in A-1 condition or a r-heel-drive personnel carrier?

Tyve don't have a pair of first class revolver necomplete with 1,200 tons of bridging to run n — our last (and only) pair were snapped by n astute buyer from Manitoba just a few ekago.

his punds like the disposal problem following air zed war, there are similarities. In fact, it's ich of Ontario Hydro operations that few seem about. Yet the surplus sales department through warehouses, workshops, and experient acres of the Ontario Hydro Service of the Etobicoke.

an(Illy, it's something to be reckoned with. Le Hartman, surplus sales engineer, puts it: e'rn business to make a buck.'' And when he's aki of bucks he's talking in the multiior ollar range.

bijest revenue producer for the department op r. Last year sales went well over the open on mark. Other metals like aluminum and

steel contributed to the 4,500 tons of scrap sold in 1966.

Since early 1965 the metal has been sold under contract at a price fixed to that of the market. In Southern Ontario where much of it originates, scrap is collected in huge containers located at special depots. Full containers are picked up by truck and delivered to the Canada Wire and Cable Company yard in Markham. There, the copper is burned clean of insulation in a furnace that once belonged to Hydro. The metal is then sold to Noranda in Montreal, where it is melted down for future use.

The contractual arrangement has eliminated much of the confusion associated with the fluctuating copper market of the last few years.

In terms of dollars, the next largest area of surplus is in construction and transportation equipment. Items in this category range from Volkswagens and bulldozers to the locomotives and massive revolver cranes used at the Mountain Chute hydro-electric project on the Madawaska River.

One of the locomotives was sold back to General Electric for use on a private line it operates. A contractor working for Manitoba Hydro purchased the two revolver cranes for use on the Kettle Falls project.

Not all the equipment consigned to Surplus Sales is sold. Much of it finds its way back to

construction sites or into Central Stores. Such things as insulators, part reels of cable, camp equipment and tools, conduit and switch gear make up between \$400,000 and \$500,000 of merchandise that went back into use last year.

Rehabilitation work, which used to form a large part of the section's activities, has been scaled down. Nowadays it just isn't worth the man-hours to put equipment like transformers, insulators, bus bars and circuit breakers back into shape. Even oil, which used to be sold separately, is now left in transformers when they are sold.

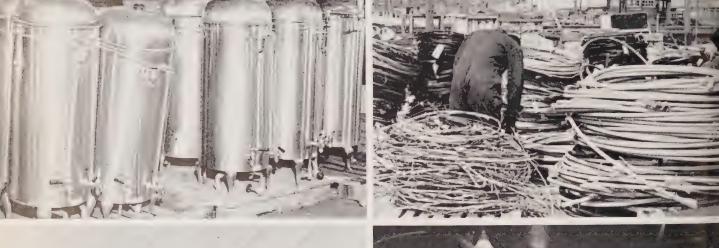
When Hydro switched from 25-cycle to 60-cycle power in the 1950s, the surplus goods business broke all records. Sales were running in the neighborhood of \$5 to \$6 million annually.

"We had to keep moving to get the stuff out and keep the yard clear," recalls disposal supervisor Bill Jacyna.

Around the same time, the Robert H. Saunders-St. Lawrence hydro-electric development was completed, and sales of Hydro surplus from it amounted to another \$2 to \$3 million. Half the proceeds went south of the border since the project was a joint Canada-U.S. one. A six-yard shovel used on the St. Lawrence project holds the record for the largest single sale.

Quite unintentionally, Bailey bridging bought up by Hydro after World War II for its own use, has proved a lucrative source of revenue. Its high











degree of versatility has kept it in demand and it now brings around \$300 a ton compared to \$95 a ton immediately after the war. Surplus Sales has been selling the cobweb sections to provincial highways departments from Newfoundland to British Columbia and also to the State of New York as its own requirements declined.

It's a fascinating tour around Hydro's surplus stock: coil upon coil of scrap cable, a toilet with a broken base, three battered fans, a bin spilling over with the carcasses of watt-hour meters, some outdated cold cathode light fixtures, mounds of used felt mattresses, a complete bread wrapping and slicing machine, a row of refrigerators and clothes washers, a construction camp potato masher, a "Farm Better Electrically" trailer, a line of small station wagons with 80,000 miles on the dials, six motorized mowers . . . the list is endless.

Jack Lochhead, another disposal supervisor, tells of three helicopters that passed through recently and of a complete bowling alley that was sold, paid for and never picked up.

What kind of people buy surplus items?

Well, aside from the commercial scrap and used equipment dealers who do purchase the bulk of the material, buyers include a cross-section of the population. Municipalities find it a good place to shop. Hydro employees go there, too. And then there's the person who just walks in to see if he can find a bargain.

Says Bill Jacyna, "One day we'll have a man drive up in a Cadillac and pick out several hundred dollars worth of surplus. But then he hasn't got \$20 cash or wants to write a cheque for the deposit.

"The next day a fellow will come in wearing worn work clothes and smelling of the barnyard. He'll pick out a tractor and pull out a four-inch wad of bills to pay the \$4,000 or \$5,000 price."

Experience shows a use can be found for everything if you wait long enough. For years, Surplus Sales has been trying to find a customer for fly ash, the minute particles extracted from the exhaust gases of coal-fired generating stations as an anti-pollution measure. It is now in the final stages of negotiating an agreement that will result in a contractor undertaking to put fly ash to use in the concrete industry. Initially fly ash from Lakeview power station, just west of Toronto, will be progressively absorbed over the next few years and the scheme could extend to other stations.

But there are exceptions to every rule and the 150-ton tree crusher, used in headpond clearing on the Mattagami River, seems to be one of them, It's been around too long and is slated to go for parts before the summer's out. Better act fast if you want this one.

Surplus Sales is where the action is. Whether it's line trucks, bulldozer tracks, revolver cranes and locomotives from the Mountain Chute project, an acre of transformers, shiny coffee urns or tons of scrap cable, the department moves them out for as much as they will command. Hydro's Model Railroad Club found a home in a railway coach that used to do its stuff up Mattagami River way. Disposal of scrap copper is streamlined with the use of huge mobile containers.



Water has risen to its full height in the Mou Chute headpond, forming a 22-mile lake and ing the church a lonely sentinel over the Donald community. Below the dam, the last penstocks is taking shape and tailraces are cleared, while excess water gushes over spill

changing scene on the madawask

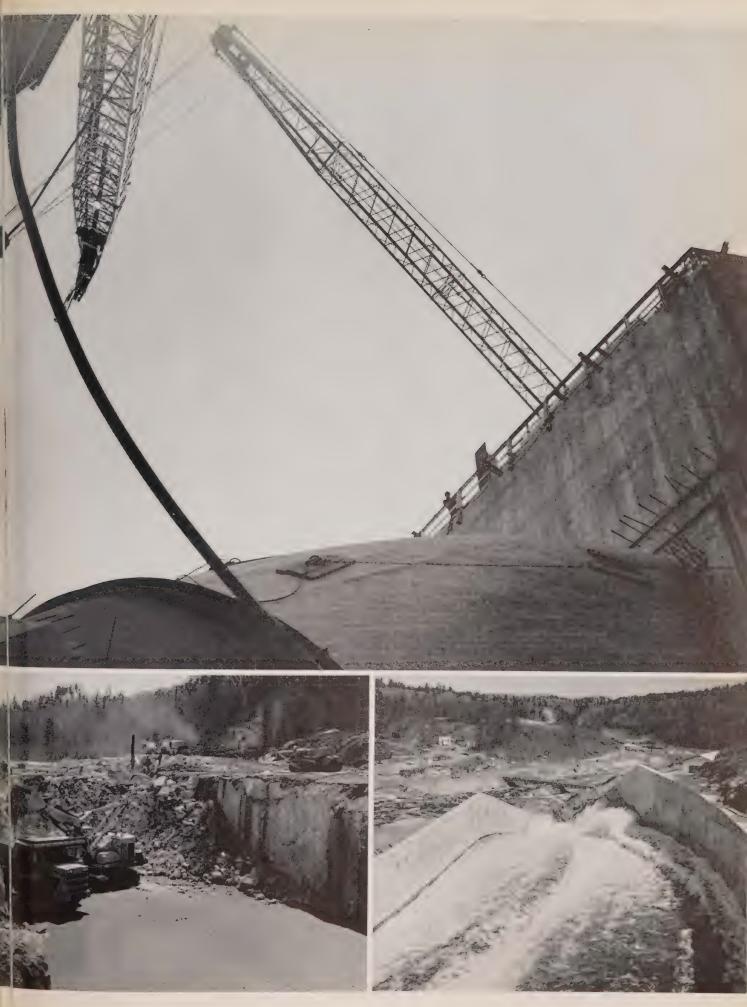
Sudden and dramatic is 20th century chang thousands of years only the gentle eroding of nature touched the meandering valley Madawaska. Now, in a few short months, a has altered. An entire landscape has been formed, a river bent to man's will. Rapids disappeared, islands have formed and a 2 lake came into existence. But in 1969, will the dust has settled and Mountain Chute, Chute and Stewartville generating statio pouring their full potential into the Ontario grid it will again be a lonely place.

Each station will be operated from a centre at Chenaux power station, 30 miles at the Ottawa River. Only maintenance me security patrols will visit the three sites.

It's hard to believe at the moment, all Mountain Chute is well on the way to compilling of the 8,500-acre headpond began in when a 100-ton concrete plug was raised boff the river bed to block an opening in the stream side of the dam. Once the plug was angle of more than 45 degrees to the hor water pressure did the rest and nudged it into the diversion port it blocked off has since filled with concrete.

Many were the memories blocked out as backed up behind the dam . . . memories Black Donald graphite mine, boulder strewl some cottages and a few hunting camps. buildings had long been dismantled and from the surrounding forests salvaged.

The mine was once the largest and riches of flake graphite in North America. It was C sole graphite producer from 1934 until it c 1954. Long before the present flooding, h



june, 1967 / 19



Rock has been blasted and cleared, left, for the additional units' penstocks at Barrett Chute. If further downstream at Stewartville, right, the race has to be widened and deepened, using scoop buckets and drilling and blasting to niques. Openings in the existing dam are to made by quarrying out massive blocks of controls.

the plant was sold and the workings allowed Homes were pulled down and now only the munity church stands guard on higher groun

But memories are fleeting and the demand power-hungry province must be satisfied.

Concrete envelope work on the Mountain steel penstocks, which carry water to the tur is in its final stages. Installation of the turn and work on the generators is underway power is expected by the end of the year.

Eight miles downstream, the existing helectric station at Barrett Chute is undergo two-unit extension while its present pair of ators is kept running. Because of their clos both projects are being treated as a single jo

Progress at Barrett Chute is on schedule excavation work for the two new 500-foo stocks completed.

Another 17 miles downstream, at Stew generating station, one of the most unusual underway. Hydro crews are literally cuttin 35 by 50-foot holes in the dam. And while sound like sabotage, it's all in the interest 0 than doubling the station's capacity by 196

The openings are for the intakes of tw generating units. Since the station had to on line and the dam stay watertight, the explosives was precluded.

To cut the precise openings, enginee installed 150-ton steel gates on the upstreatof the dam. Skindivers, working as deep as then drilled holes and installed anchors, stand guides to hold the gates in place. The prisoned water was pumped out and the coof the dam quarried just like rock. Section being lifted out in 10 to 20-ton blocks.

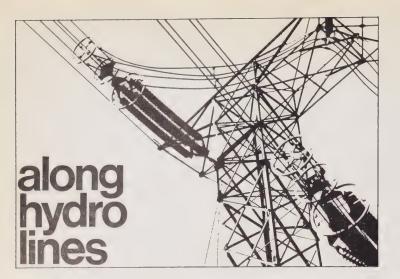
When all is completed the Madawask-will be providing enough kilowatts to mneeds of Ottawa and Kingston combined. meeting this demand, Hydro will have steamed \$57,000,000.







June: 1987 / '21



Monument to Sir Casimir

Sir Casimir Gzowski, one of the first men to realize the tremendous power-producing potential of the Niagara River, will be honored with a Centennial memorial. To be located in the Toronto lakeshore park named for him, the structure will have a bust of Sir Casimir in the centre and will be flanked by showcases of historical souvenirs. All but \$20,000 of the \$75,000 needed for the project has been collected by a committee



It was Sir Casimir who, as head

of the Niagara Parks Commission, brought the electrical pioneer Sebastian Ferranti to Niagara to study the river's power potential. Sir Casimir's life was closely interwoven with Canadian development around Confederation time. He made his mark as a builder of roads and railways in Ontario and was also one of the founders of the Engineering Institute of Canada. He served in the senate of the University of Toronto, became first president of the Ontario Jockey Club, was co-founder of the Toronto Stock Exchange and co-trustee of Wycliffe College.

When finished, the pavilion will be given to the City of Toronto.

Power site probe

Ontario Hydro is investigating the suitability of a new thermal power station site in South Fredericksburg Township, 20 miles west of Kingston.

Chairman George E. Gathercole says that several hundred acres of land have been optioned along Lake Ontario to permit tests of the foundations and other conditions. A final decision will not be reached until these tests are completed. It is not yet known whether the proposed plant will be coal-burning or nuclear, although it will probably have a generating capacity in the 2,000,000-kilowatt range.

NPD to boil

Both the past performance and future role of NPD, Canada's first nuclear power station, were touched on by J. L. Gray, president of Atomic Energy of Canada Limited, at a Mexico City nuclear

Emphasizing the pioneer role of the station, located on the Ottawa River at Rolphton, Mr. Gray said NPD has served its purpose well. It has proved out the concept of pressurized heavy water coolant, he said, and "has been an invaluable sou knowledge and experience". He pointed out that NPD hol world record for capacity factor (actual amount of power duced expressed as a percentage of the station's full cap-The average factor from 1964 to 1966 was 80.4 per cent pared to its nearest rival at 76 per cent.

'In fact," said the president, "everything has been goi well at NPD that we tend to forget about it.

Next year, NPD will be converted to a BHW (boiling water coolant) design. The change will increase the power of and provide valuable experience in the new field.

Bagging the cat

Thirty-six hours spent up a Niagara Falls hydro pole by a persian cat were not in vain . . . the local Hydro has appro rescue policy for future pole-perchers.

It works like this. Rescue calls will first go to the hu society. The society will assess the situation and contact utility, which will send out a crew armed with bucket truck pole and a sack at the end of another pole. A judicious prod and the cat will be in the bag.

Apart from the bucket truck, the method is exactly that us a citizen to rescue the white persian cat from between voltage lines after help was refused by the authorities.

\$9 million for nuclear fuel

Ontario Hydro has awarded a nuclear fuel contract worth than \$9 million for Pickering power station. Canadian Go Electric will manufacture an estimated 420 tons of n uranium for initial loading of the reactors. Deliveries next Mav.

Under previously announced long-term contracts with Eld Mining and Refining and Rio Algom Mines, Hydro will pr the black uranium dioxide powder. It will be made into pell CGE at Toronto and fabricated into fuel bundles at Peterbor

Pickering's four 540,000-kilowatt units will go into service a year, from 1970 to 1973 inclusive. Cost of the station, just of Toronto, is estimated at \$528 million.

IDs for utilities

Burlington PUC is the first of many municipal utilities to iss employees with identification cards from a new mobile t Ontario Hydro. The scheme is a follow-up to a request for cards from the OMEA's annual meeting in February. Preco-ordinator S. E. Abbott is shown checking the equilbefore it goes into operation at Burlington.

Similar to those issued to Ontario Hydro employees, the are laminated in plastic and have a colored photograph employee as an integral part. The equipment, which is mar

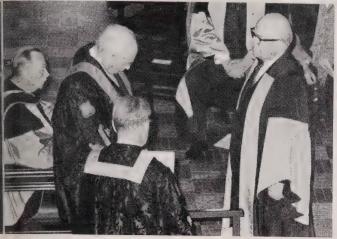


A full color presentation.

by Polaroid, takes only three minutes to produce a finished hat is virtually tamper-proof.

mobile identification unit will work its way across Western io and back again to Central Ontario and the Georgian Bay "shooting" both municipal utility employees and eligible to Hydro personnel. In September it will visit the northern of the province.

ew honor



follows engineering.

Hydro General Manager Dr. J. Mervyn Hambley was 14 persons who received honorary degrees at Queen's visity last month.

nhonorary Doctor of Science degree was conferred on Hmbley, right, at the first of six spring convocations. At the lime, Dr. Robert Uffen, chairman of the Defence Research was similarly honored. Dr. Uffen addressed graduates of science receiving their B.Sc. degrees.

ommemorate the occasion, Kingston PUC presented Dr. by with an inscribed desk set at a reception the evening rethe convocation. Dr. Hambley is a former graduate of es and in 1965 received an honorary Doctor of Engineering e from the University of Waterloo.

unicipal briefs

ts went from the Peterborough Review to the local is commission for the part it played in bringing Operation — a travelling display of outdoor lighting — to the city. Without saying that we shall miss the lighting, which has shall miss the newspaper.

etburg PUC plans to install a two-way radio system to allow or sto communicate with the utility's service centre and with prior Hydro area office.

^MS. **Robb** has been appointed to the Smiths Falls Hydro msion to fill the unexpired term of the late N. J. Douglas. Rob is a former mayor of the town.

h prk Hydro Chairman A. K. Meen, Q.C., has been chosen by Conservatives as their candidate for the provincial riding of

ar Harling has retired after more than 27 years with Port UC. He started with the utility as a substation operator to become superintendent of the electric department, a he has held since 1956. Martin Isotalo succeeds as tirendent with C. B. Biggs as his assistant.

ay'r exercised a lady's prerogative at a dinner marking her

retirement as secretary-treasurer of Wallaceburg Hydro — she refused to say how long she had been with the utility. Town and Hydro officials all paid tribute to Miss Taylor at the dinner.

Of all the highlights of her 100-year life, Miss Mary Hawkins, of Brockville, considers the introduction of electricity the most fascinating. She remembers electric lights in Buffalo as early as 1901 and also saw one of the first "horseless carriages" to run on electric power.

Galt PUC building is getting the full treatment for Centennial year — repairs, paint and floodlights. Sodium vapor lights have been installed to illuminate the columns of the building.

Delegates attending the Northeastern Region AMEU's spring meeting in West Ferris heard various progress reports, papers on the North American power grid, Expo '67, electrical modernization and rates, and saw a film on the Hydro Hall of Memory. Luncheon speaker was Ontario Hydro Commissioner Ian F. McRae, who talked about the province's nuclear power program. Officials elected were: E. A. Bevilacqua; D. W. Dowds, R. T. Williams, vice-president; O. W. Harris, president; Grant Marshall, past-president; G. B. Stroud, secretary-treasurer.

Stratford PUC Manager Douglas M. Seath has been elected president of the local Rotary Club. He has been an active member since moving to Stratford from Ingersoll in 1958.

Scarborough will soon have more than 1,400 all-electric homes. T. J. Curtis, PUC manager, says about 400 all-electric homes are already occupied and at least 1,000 more will be added this year. A veteran member of Thorold PUC, C. Richard Buss, has died at the age of 62. Mr. Buss, who took a keen interest in civic and community affairs, was first elected to the PUC in 1947. He was born in Kalamazoo, Michigan, and educated in Ontario, graduating from Queen's University as a mining engineer. He was employed by Nipissing Mines in Northern Ontario and Manitoba and in 1934 moved to Thorold where he founded the company Spun Rock Wools to manufacture insulating materials. Mr. Buss was a member of the Association of Professional Engineers of Ontario and a past president of OMEA District 5.

A new image

A joint OMEA-AMEU workshop in Toronto last month broke ground in the public relations field. The five-hour session, hosted by the provincial Public Relations Co-ordinating Committee, drew 40 delegates representing the district committees. Most of the meeting was devoted to problem-solving with the members splitting off into smaller groups for round-the-table discussion.

At the start of the meeting, all members wore masks to illustrate the blank state of the municipal utilities' public image. Explaining the move, Chairmen Jack Anderson, of Leamington, and Bruce McCubbin, of North Bay, said the utilities up to now haven't had face or public image, but that sessions like this would help to improve the situation.



They want to see a reflection.

In his keynote address, D. P. Cliff, Ontario Hydro's First Vice-Chairman, who precipitated the forming of an OMEA-AMEU joint public relations committee, said: "The dimensions of the problem (poor public relations) have been measured and the response is being put together."

Mr. Cliff warned delegates that public relations is not a magic wand that will transform sins into enlightened policies, nor will it brighten tarnished armor overnight. "You must work for the long run, and your planning and organization so far suggests

you are well aware of it.'

Details of the utilities' bid to improve their public image will appear in our July-August issue.

Laser scalpel

Surgeons may soon wield a laser beam, or a scalpel with equal dexterity. Engineers at the Bell Telephone Laboratories in New Jersey have developed a jointed arm which allows the laser complete freedom of movement. Prisms in the arm bend the beam of coherent light. A lens at the tip of the probe focuses the beam to a pinpoint.

Freedom of movement has been a major obstacle to the wider use of lasers in surgery, although they have been employed experimentally for such operations as the correction of detached

Graduate linemen



Classroom in the sky.

Skilled linemen are now graduating from a four-year training course introduced by Ontario Hydro to offset a shortage in this highly specialized field. About 100 trainees were on course at the end of last year. The number will be stepped up to 140 on a continuing basis.

Although the program emphasizes on-the-job training, the men also spend nine weeks at Niagara Falls training centre learning the theories and techniques of their trade. Some of the first group of 18 graduates are seen practising live-line maintenance at the training school.

Strikes and the OMEA

An Ontario Royal Commission inquiring into labor disputes has heard a submission by John MacBeth, Q.C., a member of the OMEA's Legislation Committee. Headed by Ivan C. Rand, a former justice of the Supreme Court of Canada, the commission has been at work for several months.

In the main, the brief recommended: that arbitration of labor disputes in the field of hydro-electric energy be made compulsory; that the present procedure of obtaining an injunction against an illegal strike be retained; and that the necessity of

obtaining permission to prosecute from the Ontario Labor tions Board be removed.

The submission said, "Our municipalities can no longer: the luxury of the availability of strike action, . . ." It added: right to strike against an essential industry which is provide service to a municipality irreplaceable with another commod by other organization, either on a temporary or on a long basis, appears now to be something which society can no l accept as in the best interests of all concerned."

PROs move



Jack Boitson

Writer and broadcaster Jack Boitso been appointed public relations office Ontario Hydro's Western Region, H be based in London and succeeds Smart, who moves to Toronto to as new responsibilities with the Public tions Division.

Mr. Boitson, born and educated in V peg, started his career as an annou working for radio stations in Man Saskatchewan and Ontario. After a

year spell in the advertising business he moved to the m and smelting firm of Cominco in Trail, British Columbia, fi assistant editor of Cominco Magazine and then doing ge public relations work with the company.

Before joining Ontario Hydro in 1963 as a writer, Mr. Bo was public relations and sales promotion director for CKS in Sudbury. He also served as a commissioned public rela officer with the Canadian Army (Militia) for about six years.

Technically speaking

Copies of the following papers can be obtained from the F Relations Division, Ontario Hydro.

Optimum Loading of Hydro Plant Units, by Al Aitchison, versity of Waterloo; J. M. McNamee, Ontario Hydro Comp Services; M. V. Spence, Ontario Hydro Operations; K. A. and Debra K. Sutherland, formerly Ontario Hydro Comp Services, and K. H. Weissert, Ontario Hydro Computing Ser Given at the Power Industry Computer Applications Confer Pittsburgh, Pa., May 15-17.

Oil-filled Cable Tests for Economic Emergency Loading, by Cameron, Ontario Hydro Research. Given at the Institu

Electrical and Electronics Engineers, April 19.

Load Rejection Testing of Large Thermal-Electric Gene Units, by R. H. Hillery and E. D. Holdup, Ontario Hydro Opera Given at the winter power meeting, Institute of Electrical Electronics Engineers, New York, February 2.

April energy production

Primary energy provided by Ontario Hydro in April total 4.15 billion kilowatt-hours, an increase of 7.3 per ce over the same month a year ago.

For the first 4 months of 1967, the total is 17.56 billi kilowatt-hours, up 8.2 per cent over the same peri last vear.

Adjusted for seasonal influences, primary energy dema in April was 4.22 billion kilowatt-hours, 0.3 per cent me than the previous month.

The seasonally adjusted total for April represents 50 billion kilowatt-hours at annual rates. This is 363.66 cent of the energy demand in 1949.





ang finished our customary lunch, just a few cs on a lump of sugar, we're off on another to that never-never land of literary fancy he every electrical happening is a psyche-experience and even the faintest flow of erons is enough to turn us on.

the latest crop of electrical milestones in the latest crop of electrical milestones. The latest crop of electrical milestones in the latest crop of electrical mile

lengland, for example, where psychiatrists a already used electricity to promote love and organism of the promote love and organism. A piddling development in engrange theme of things, perhaps, but a tastep towards the ultimate goal. We'll falled short of Utopia so long as a husband's supstant of the promote long is disturbed by the tortured tonsils hopen-mouthed opponent on the high voltage of the electric blanket.

new British approach to nocturnal silence of es connecting a small power unit to a tiny ichone which is attached by wires to the feler's arm. At the first raucous note, an esc c impulse is sent to the arm, causing it to vit but not awakening the owner. After a few eet, they would have us believe, the machine a eliminated because the arm will twitch to atically at the first snore.

We and good, it seems to us, but with a few ne nt dangers. Immunity could conceivably vep which would see us saddled with bed ate who not only snore but accompany their nd ons with violent twitchings. It's a real vin ng prospect — like trying to sleep with a df of Beatles.

Spiking of the Beatles, there's reason to lie that hipsters will be digging those crazy on its long after the Liverpuddlians have hung the guitars. Jazzman Moe Koffman digs the nd ith his latest innovation — the all-electric one. Moe says the most interesting aspect

of the instrument is its octomatic device. By pressing a switch he can play duets. "It's like having two saxophones on the stand," he says, "and when I play both alto and tenor it is like a whole sax section."

As one columnist reports, "Koffman's facility and ability as a musician is extensive. Using the octomatic device he can run together phrases until the music becomes almost a stream of consciousness."

It's like we thought, man, hit the LSD (loud sound device) and you're off on a real trip. And Moe swings better electrically right down the line. In concert with the electronic organ and an electric bass, he makes some very interesting sounds. Now he's working on an octomatic flute and plans to cut an all-electric disc or two in the near future.

Exemplary as they may be, Mr. Koffman's efforts to switch on electrically may have come too late. Electronic music, in which some degree of euphony is imposed on the beeps, whistles and growls of live electrical circuitry, threatens to make musical instruments obsolete altogether.

This last bit of intelligence comes to us from the Ottawa Citizen in an interview with Dr. Hugh LeCaine of the National Research Council. Described as one of North America's leading authorities on electronic music, Dr. LeCaine explains that electronic music has permitted composers to experiment with any rhythm, pitch or tone color they like, and to break out of the conventional system.

But don't get the idea it's a snap—like whomping out Old Black Joe on a washtub to the accompaniment of an old saw blade and a jug or two. By his own admission, Dr. LeCaine once spent an hour and a half dropping water from an eye-dropper into a waste-paper basket full of water before he could record the sound he wanted. Presumably he was after a sound like water makes when it falls from an eye-dropper into a damp wastebasket.

No, this is pretty sophisticated stuff and we understand that the University of Toronto has been providing an extensive electronic music teaching program since 1959. McGill has since opened a studio and Simon Fraser in British Columbia is coming in on the down-beat with a rousing beep-beep of its own.

Harking back to Dr. LeCaine for just a moment, though, it wouldn't be fair to leave the impression he's completely sold on transistors, diodes and resistors as substitutes for pianos and piccolos. He breaks down at the end of the interview and confides that "the sound of a waterfall or of a Hotchkiss reciprocating sump-pump can be used as music, but give me Beethoven."

It's always sad to hear a strong man break down and desert his principles but we're still sold on the electrical way of doing things. Even the staunchest of conventional music makers will eventually succumb to the superior armament of our wild and way-out electricians and technicians. What with micro-circuitry and other advances in miniaturization, it will soon be possible to conceal the electronic equivalent of a 32-piece orchestra in the wide end of a tuba with enough room left over to hide the technician's beer supply.

While we're on this musical kick we'd like to

get in a word or two about the worm grunters of Sopchoppy. These folks in the panhandle region of Florida charm worms right out of the ground with a weird, grunting kind of tune played on a wooden stake with a narrow strip of steel. Grunters drive the stakes into the ground and, "caressing" them with the steel bars at just the right trequency, set up vibrations in the ground which bring the worms charging to the surface.

Good grunters can earn \$65 a week and their efforts have enabled nearby Blountstown to proclaim itself "Worm Capital of the World". Sopchoppy takes pride in being the home of some of the really great grunters.

Said to resemble the sound of "wild pigs rooting for breakfast", this music will never make Carnegie Hall, of course, but to the worms, it's the greatest. And the day may well come when they'll be grunting even better electrically.

Regular readers will be growing uneasy along about now, fearing that the column might end without any reference to sex. Perish the thought. To survive, a column must be either witty, informative, well written or sexy — so let's get on with the birds and the bees.

From Washington comes a disturbing word about a new contraceptive pill recently turned down after testing by the Food and Drug Administration. The pill, according to our intelligence, was being given to men and it got the old heave-ho not because it was ineffective but because of an unexpected side effect. "When the subjects who were taking the pill ingested any alcohol," reads the report, "their eyeballs turned pink."

Good and sufficient reason for calling a halt to proceedings, we'll agree, as few men would care to advertise the fact that they were taking birth control pills and had a drinking problem into the bargain. At the same time, those pink eyes are hard to explain. Had they been accompanied by a lengthening of the ears and a twitching of the nostrils it might be assumed that the pill's creators had stumbled on a rabbit test for men.

All of which puts us in mind of a pair of meaningful statistics we came upon recently relative to the reproductive capacities of university graduates. On the average, it was pointed out, Vassar graduates had 1.7 children while Yale grads had 1.4 children. This tends to confirm our suspicion that women have more children than men.

As a final word, we would like to apologize for some misleading statistics published recently in this column having to do with the ice-forming capabilities of the Niagara River. In suggesting that a daily output of 1,000,000 cubic yards of ice was enough to chill 15,000,000 drinks, we were away out. As Frank Rubie in the Tillsonburg *News* rightly points out, this amounts to nearly two cubic feet of ice per drink.

Somewhat intoxicated by the whole prospect, we apparently lost a set of triple zeros which should have appeared at the end of that figure on drinks.

We'd be the last to dilute good scotch to such an irreverent degree and trust Mr. Rubie relied on his arithmetic in discovering the error. Any attempt to prove us wrong by performance could result in a sizeable hangover.

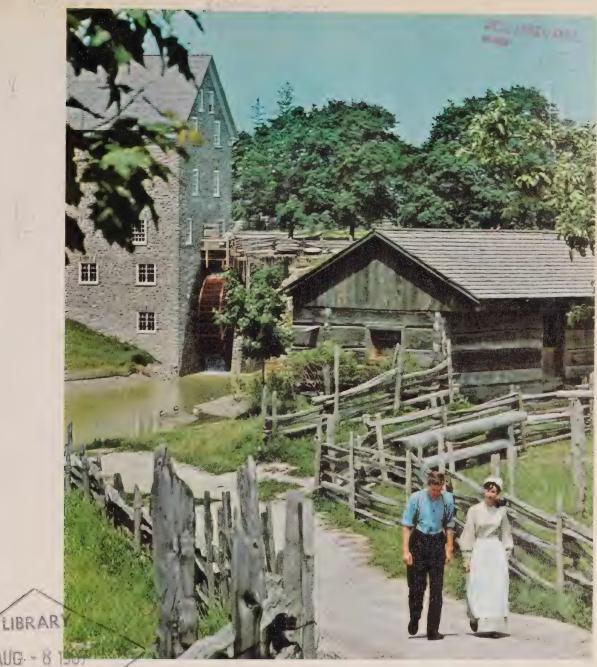




anyone for chess?

It's a smart move to include the Ontario pavilion on your Expo itinerary but its swinging exhibits have a lot more to offer than fun and games. Giant chessmen shown contain sound and film stories of famous Ontario citizens. Electricity and its contribution to a go-go province are among the pavilion's features.

Another must for the Expo visitor is the theme pavilion "Man the Producer". Its "resources" section is co-sponsored by Ontario and Quebec Hydro.



ontario hydro news

july-august/1967
•mill without a stream •pole fires in the rain

PERTODICALS DEPT-UN CHIEF TERKARGEN

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july-august 67

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the cover

Staff photographer Harry Wilson stepped back over 100 years to take this view of a typical Ontario village of pre-Confederation vintage. Black Creek Pioneer Village on the outskirts of Metro Toronto is complete from flour mill to schoolhouse and from taproom to harness shop. Electricity was still a laboratory phenomenon in those days but it's helping to make the scene authentic.

Please see page 12 for details.

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Time to travel

Ontario Hydro's floral clock at Niagara Falls is sporting a time new face for Canada's Centennial year. The clock's 40-foot d has been decorated with more than 24,000 contrasting carp plants to form the 10 provincial crests and the figures 1867 at 1967.

With as many as 1,000,000 people visiting the clock ea year, it has become one of the continent's major tourist attrations. Visitors usually combine a look at the outdoor timepie with a tour of the adjacent Sir Adam Beck generating station. An added attraction this year is the OMEA-AMEU-Ontario Hyc Hall of Memory in the old Beck plant.

Every year Hydro's Niagara region staff designs a new far for the clock, located six miles from the falls. This year the colorred, white and blue predominate. Largest of its kind in the wor the clock is more than three times the size of the one built Edinburgh, Scotland, in 1903.

However, the clock and the next-door power stations are Ji some of the many Hydro facilities worth visiting. Under construction close to Toronto there is the \$266 million Pickeri generating station, the province's third nuclear power station. Near Cornwall is the Robert H. Saunders-St. Lawrence generation station forming half of a 3,300-foot international powerhor stretching from Canada to the United States.

North, on the Ottawa River, travellers can view the Nucl Power Demonstration plant at Rolphton, and Des Joachir largest of Hydro's four hydro-electric stations on the river.

On the eastern shore of Lake Huron, near Kincardine, is Doug Point—the province's first full-scale nuclear power stati Lambton generating station, under construction a few miles so of Sarnia on the St. Clair River, is another interesting spot to vi This coal-fired station will start up late next year.

ember the horse? Remember that valiant, ing, steaming creature that fell victim to an f automobiles, tractors and electric power?

burse you do, for he never really disappeared. tatistics do show a subtle change. Canadian trations of draft horses have remained fairly at a few hundred a year for the past de; new registrations of saddle horses have ed from 3,000 in 1956 to 5,000 last year.

use livestock records refer to only purebred als registered in a given year, they yield no picture of the nation's horse population. do, however, illustrate a pronounced swing workhorse to saddle horse.

he least responsible for saving the horse virtual extinction are the thousands of eyed teenage girls in their seventh heaven riding boots, stirrups and the smell of an he pal. Weekly riding lessons are becoming asingly popular for young girls from middlehomes. Riding clubs are mushrooming as bia takes over where the farms left off.

est is focussed mainly on large urban in Ontario, Quebec and British Columbia. despite the high degree of mechanization on tio farms, the province's horse population is i ed to be second only to the ranchlands of

ving and caring for a horse will quickly punch in the best upholstered bank balance. It sanything from \$300 to \$2,000 or more for vy-trained riding horse. Stabling fees vary, till probably be in excess of \$70 a month a saddle may run from \$150 upward. And forget that a horse, like a car, depreciates.

(ample of a progressive riding school is the lion Equestrian Club, north of Toronto. It is Captain John de Kenyeres, a former id in the Hungarian cavalry, and is unusual th: it is entirely non-profitmaking.

en ers buy a no-interest \$100 debenture joing the club. This is returned when they Vi The club charges \$30 a month for a el/ lesson on one of the school's 40 horses. mers are charged \$87 a month for boarding oh although this includes two weekly lessons.

Citain Kenyeres, who has been in the d since he was three, riding is a way of life. ir sts on impeccable behavior from his iniriders, boys and girls alike. If he doesn't it hey're out.

od manners means comradeship, not to be ot unter and to show proper behavior at ins," says the captain, who spent nine

whatever became of the horse?

by Les Dobson



years in a Siberian prisoner-of-war camp. He was returned to Hungary on Stalin's death and escaped during the revolution of 1956.

Neither can his time be bought. "I take the senior classes and every student has to earn my instruction by working his or her way into the senior grade. It doesn't matter what father does; they can't qualify with money."

The captain's methods are undoubtedly effective. His young riders have won top honors at national show-jumping events and several of them are considered to be of Olympic standard. Under his guidance, the club has risen from humble beginnings to become a \$225,000 operation.

Captain Kenyeres feels that more boys would show an interest in riding were they not expected to participate in so many team games at school. "Many of them don't realize the challenge that riding offers," he says. "It takes lots of determination and heart to break a green horse or go over a high course."

Although the club is primarily for juniors, it does offer family membership. Toronto lawyer John Howard, for instance, enrolled his daughter, Gillian, in the club six years ago. Not only do their other children now ride, but the parents

















Horses and leisure: girls from the Toronto suburbs take weekly riding lessons at the Eglinton Equestrian Club, an entirely nonprofitmaking organization. On the right is chief instructor Captain John de Kenyeres.

have taken lessons themselves and Mr. Howard is serving as a club director.

Riding schools may be big business, but horse racing is even bigger and the "sport of kings" has made tremendous strides in this country since 1960, when a Canadian-bred and trained horse ran third in the Kentucky Derby. That was E. P. Taylor's Victoria Park. Then along came horses like Northern Dancer and Cool Reception and Canadian thoroughbred racing had really come of age.

Racing in Southern Ontario is controlled by the Jockey Club, which operates thoroughbred

racing at Toronto's Woodbine and Greenwood tracks and at Fort Erie, and harness racing at Greenwood, Mohawk Raceway, 25 miles west of Toronto, and the Garden City Raceway near St. Catharines.

Nearly three million spectators wagered about \$167 million on Jockey Club tracks last year. Nine per cent of this stake went to the Jockey Club, six per cent to the Ontario Government and a further one-half per cent to the federal Department of Agriculture for certain supervisory duties. The remainder was returned to the betting public.

Yet the financial going is heavy. Mr. Taylor, as chairman of the Jockey Club, has warned that the government will have to abandon its share of the "take" if high-calibre racing is to survive.

The cost of owning and training a racing thoroughbred is extremely high, and in Ontario varies between \$5,000 and \$6,000 a year. A

horse who proves he's a winner will quickly become a "millionaire". Stud feed cost a sma fortune - E. P. Taylor charges \$10,000 for his best blood line.

Syndication of proven horses for stud purpos has replaced the big bettors, particularly in the United States where net gambling winnings taxable at regular income rates. For the most part, it is only the "poor man" who bets big : the racetrack.

Syndication simply means division of the ow ship of a horse into a number of shares. While the horse is racing, the shareholders receive: proportion of his earnings. But the real mone starts to flow once the horse retires from the track. Shares have been sold for anything fro \$5,000 to \$50,000 apiece, putting a single horse into the "millionaire" bracket.

Riding for pleasure and racing for profit accord for a large proportion of the province's horse population. But the traditional friend of man other occupations. Metropolitan Toronto Po







stance, find horses indispensable for such as crowd control and for patrolling city They maintain a mounted unit of 44 s and 53 constables.

other end of the social scale, however, is er and far sorrier creature, the PMU mare. ant mare urine is, unfortunately, the only cal source of estrogen, the drug which has so much throughout the world to alleviate istress of menopause in middle-aged en. Production of the drug is an entirely dian process and both manufacturing anies are located in Montreal.

s the drug can be reliably synthesized, ands of Canadian mares will be continupregnant for the 20 or 30 years of their According to the Ontario Humane Society, ites show that fifty per cent of all Canadian will soon be pregnant mares used for production. It is believed that Ontario alone ore than 50,000 such horses.

With the PMU trade expanding so rapidly, the Humane Society is naturally worried about cases of abuse. While many farms are efficient and care for their horses, the society claims that the PMU business is also attracting bad horsemen. There is the additional problem of what to do with the thousands of unwanted PMU foals born each year.

On the brighter side, it looks as though the workhorse may be making a comeback - in one industry, anyway. With the advent of automation, at least two Ontario dairies have found it more economical to use the old-fashioned dray on some routes.

Allan Pietz, president of Welland's Sunnyside Dairy and also the city's mayor, estimates that horse-drawn vehicles have cut his delivery costs by 75 per cent where they are used. His company uses horses on nine of its 20 delivery

"Horses have an advantage over any truck they'll work with the milkman," says Mr. Pietz. Horses and work: Sunnyside is one of two Welland dairies which find it more economical to use horses on some routes. Besides helping the milkman by moving ahead while he makes several calls, the horses are novel enough to excite the interest of youngsters.

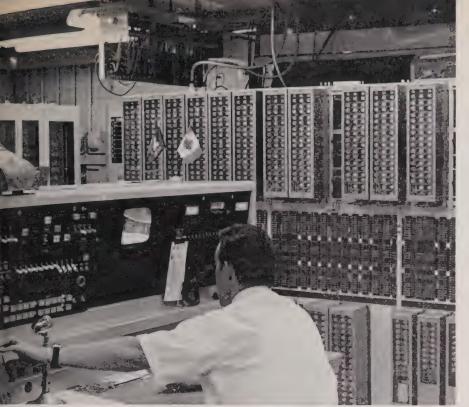
"They'll allow him to make three or four calls and wait for him at the end house. This really speeds up delivery."

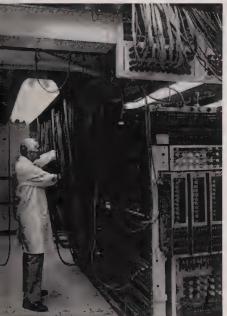
Mr. Pietz has installed an alarm clock to trigger an automatic hopper-feeding system at 3 a.m., saving a man having to get up early to feed the horses.

Ideas that save money have a habit of catching on and it may be that the workhorse will yet receive a new lease on life. But while the wheel may never turn full circle, the horse appears in no immediate danger of extinction.

Today's affluent society has seen to that.











the electronics of racing

The \$15 million Woodbine racetrack just north of Toronto International Airport is a city within a city. It has a bank, bars, restaurants, workshops, a hospital, a barber shop, 23 miles of paved roads and even a jail. It has closed-circuit TV, its own printing shop and storage for 17 million gallons of drinking and irrigation water.

Woodbine is also a masterpiece of electrical and electronic ingenuity that places a 1,200-kilowatt load on the Hydro system.

To keep track of betting and calculate winnings, for instance, the Jockey Club makes use of nine truckloads of portable computer equipment that would be the envy of any large bank.

Services are provided by the Canadian Totalisator, Company, which operates electromagnetic calculators recording every win, place or show ticket sold at the 200 issuing windows, some of them nearly a mile from the tote room.

Daily double and exactor bets, with their associated mathematical combinations, are recorded on a separate electronic computer equipped with high-speed print-out. The machines calculate the approximate odds and the number of bets placed on each horse, flashing the totals to illuminated boards on the track. These figures are updated every 90 seconds until "they're off".

All this information and more is duplicated in the pari-mutuel calculating room where the race-day atmosphere is as tense as that of a large newspaper office. Pari-mutuel betting, means as the term implies, mutual wagering among the betting public. The racecourse merely acts as the stakeholder, deducting from the betting pool the percentages of the Jockey Club and the Ontario and federal governments.

Mutuel employees use closed-circuit television to scan the lighted tote board digits for burned-out bulbs and also to follow the progress of the race. Calculation of the payout on the "first three" is an old-fashioned pencil and paper affair. But figures are checked against the computer, just in case.

At the start of each race, a Department of Agriculture official presses a button that locks every ticket-issuing machine on the track. The payout can begin only after cashiers receive the green light from the pari-mutuel.

Woodbine has a 1,000-strong workforce on call for the big thoroughbred meetings. Its modern grandstand will seat 12,000 spectators, although the sprawling 780-acre site has accommodated 32,500 with ease. Among others, Woodbine employs an army of maintenance men, an extensive security force and an array of shapely secretaries — all to cater to the racing public and handle the millions of dollars that change hands there every year.

Nine truckloads of portable computer equipment keep tabs on betting at Jockey Club's major tracks. Pictures were taken during thoroughbred racing at Woodbine and night-time harness racing at Mohawk Raceway, 25 miles west of Toronto.





Much of the appeal of the Montreal World Extion is based on architectural fantasy and psydelic effect. But like the Man and His Womirrors, this bubbling display of national achieves ment is organized around electric power.

Even a cursory glance at the intricate ligl communications and transportation system not to mention the electronic ingenuity of exhibits themselves — will show that electic is as vital to Expo 67 as the two islands on the global spectacle stands.

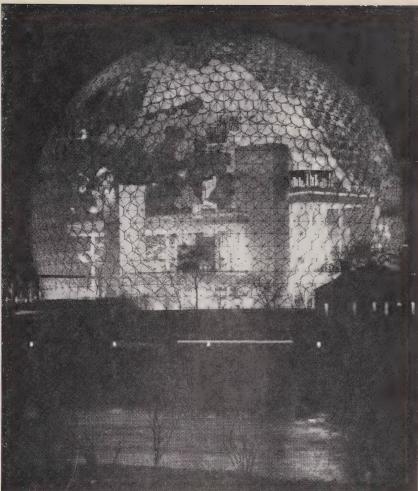
It's a show of a lifetime with a kilowatt sumption comparable to that of a city of 5 people. And before the final curtain falls a end of October, Expo will have consumed than \$1 million worth of electrical energy.

After-dark energy from the remote rive French Canada transforms the site into a glit fairyland. The pavilions representing som nations outshine even the nightlife of dowr Montreal. Cleverly placed lighting gives meaning to everything from the geodesic-d superculture of the United States to the or splendor of Thailand. It proclaims the ur pleted greatness of Britain; emphasizes the

electricity sparks expo

Come nightfall and the skilled use of modern lighting techniques lends a fairytale atmosphere to the Expo site. Shown from the left are the pavilions representing Thailand, Canada, Czechoslovakia and the United States.





tetrahedrons that house the Man the Proexhibit.

night, too, all the world whirls at La Ronde, williantly lit mixture of thrilling rides, good, cabarets and boutiques.

soft glow of indirect lighting bathes the site. Many street lamps consist of a translubreglass cylinder at the base and a stainless pole topped with a fibreglass reflector. A stensity beam is projected from the cylinder reflector, which diffuses the light over a wide flexibility is achieved by placing the reflectorarying heights and angles. Landscaping is ped by lights that illuminate shrubbery and

e than 300 public telephones and well over mergency telephones dot the site. Phones ranged in clusters of three, separated by acrylic panels and covered by a dome of the transparent material. The emergency telefunit also includes a public address system. Farticular interest are the electronic informaticular interest are the

is the first of its kind in the world and was manufactured in Canada.

Five double boards and one single board are strategically located on Expo's 1,000 acres to carry either one message or 11 different messages simultaneously. It is estimated that a bulletin run four times an average day is seen by approximately 200,000 people.

Electric express trains whisk footsore visitors in air-conditioned comfort from one island to the next. And they travel for free. The system consists of eight trains of six subway-type cars each and has been carrying 21,000 passengers an hour.

Secondary transportation includes three minirail systems — overhead electric trains running on a single steel beam. Minirail loops serving the Ile Sainte-Hélène pavilions and La Ronde are motorman-operated and were purchased from the Swiss National Exhibition in Lausanne. The Ile Notre-Dame line is a completely new, fully automatic operation capable of carrying 6,000 passengers an hour.

It naturally fell to Hydro-Quebec to provide the motive force for the exhibition, but Ontario Hydro joined it to promote a sizeable slice of Expo itself.

Both are sponsoring the Resources section of Man the Producer pavilion, where man's ingenuity in exploiting raw materials and latent energy is dramatically presented.

Illuminated transparent cubes are used to illustrate how plants, wood, coal and even the human body are composed of the same major elements and how raw materials are now broken down and reconstituted to form the synthetics of modern living.

Some displays explore the newer methods of converting energy into electric power — from fuel cells to solar cells — while others look to our future need for natural resources. Easily accessible supplies of the earth's mineral and fuel wealth are nearing depletion, we are told. But the sea "is a huge, almost untapped reservoir of food and raw materials".

Education provides the means to change potential resources into real wealth. Our most important resource of all: children.

All in all, Expo adds up to a scintillating spectacular in which electricity plays a major role. Indeed, Man and his 20th Century world could not be portrayed without it.

action acton



Speaking alphabetically, Acton Hydro is the of Ontario's 350-odd municipal utilities. It is the latest to centralize its operation with a glear new office and service centre. Acton is just ea Guelph.

The \$70,000 electrical showpiece was open last month along with the town's Center project — an attractive library. Both buildings v designed by the same architect.

At the heart of the utility building lies a stou structure until recently used as a service ce Not that you can tell, so well is it concealed u brick facing and all the materials and technic of modern construction.

With only 1,350 customers, Acton Hydro built with a shrewd eye for the future. Yet s attention was paid to costs and the emplo themselves pitched in to install the lighting electric heating. They'll put in air conditionin soon as the budget permits.

"From start to finish, the building took only months to complete and we put in quite a few hours to keep ahead of construction," says su intendent Doug Mason, who heads a staff of

Electric baseboard heating is used to warn offices, which cover 2,100 square feet and inc a spacious boardroom, a fireproof vault for utility's records and a soundproof room to m the clatter of billing equipment. Each room individual heat controls.

The service area covers 3,460 square fee three levels. It contains a meter shop and stor well as the superintendent's office. Bays are vided for four trucks, which will back up raised dock to aid unloading. Electric force heaters warm the work area.

More than 100 guests attended the of opening. They included Dr. H. A. Harley and Kerr, MP and MPP respectively for Halton J. D. Fleming, president of the Ontario Mun Electric Association; and A. G. Stacey, preside

Young guests sign visitors' book at opening of Acton Hydro's new office and service centre. Below is the town's new public library, which was designed by the same architect and opened same day.





the Association of Municipal Electrical Utilities. Guest speaker was Ontario Hydro Chairman George E. Gathercole, who unveiled a commemorative plague.

Mr. Gathercole said that at the formation of Acton Hydro 54 years ago, the cost of electric power was about 10¢ a kilowatt-hour. Since then, the cost of practically everything had risen while the price of electricity had decreased about ten times.

"If my calculations are correct, the average 12-month electric bill for a residential customer of Acton Hydro was about \$85 last year. This means the average householder paid about 23¢ a day for power — about half the cost of a package of cigarettes. That's the cost of electric energy," he said.

E. G. Tyler, the utility chairman, said the new building would solve problems of over-crowding. "We have built for the present and for the future. We are prepared to fulfill our function of supplying Acton with power for many years to come."

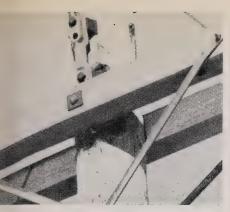
Acton's electrical history dates back to well before the turn of the century when a travelling "professor" staged a display with portable generator and lamp in the old Temperance Hall on Church Street. The town's first real power came from a steam generator and by 1908 there were between 30 and 40 customers, although the generator shut down at 10 each night. By 1913 the town was buying Niagara Falls power from Ontario Hydro.

Although Acton has a population of only 4,400, it has a diversity of light industry and several companies have recently located there. Two new housing subdivisions are being built — one at each end of the town — and the trend is toward underground electrical distribution.

Acton Hydro itself has made a bold move in taking the future into consideration. However you approach it, alphabetically, or from the standpoint of planning, the utility stands near the top of its class.

AMEU president A. G. Stacey speaks at the opening. Beside the commemorative plaque, left to right, are: Mayor L. A. Duby, W. McEachern, O. R. Brown and D. Dawkins, all of the Acton Commission, with Ontario Hydro Chairman George E. Gathercole and Acton Chairman E. G. Tyler.





normal pattern of pole top fire is shown we. Flames have blackened the high-stance area right beneath the crossarm. It trasts with the unusual pattern at the left ere the current has followed the metal supsished caused a fire where they're bolted to pole.

ole top fires

vas the first day of spring. Several weeks of shine and brittle cold had given way, typically, rizzle and wet snow.

ngineers keeping an eye on monitors at the ario Hydro system control centre in Etobicoke expecting trouble in the province's complex ver network. It came as many people sat down reakfast — at 7.49 a.m.

addenly, a stretch of transmission line near msville went dead as automatic circuit breakers ned. Somewhere along the route a wooden had burst into flames.

8.01, another pole caught fire 30 miles away lilton, blacking out a school and several indus-. Forty-seven minutes later customers around inton, south of Barrie, were left without power nything up to half an hour by yet another poleconflagration.

It the trouble had only just begun. Protective ces shut off five generators at Ontario Hydro's ear-old Toronto Power Station at Niagara that afternoon as an unexpected surge of erflowed along a main feeder line. Nine of the ydro-electric units at Hydro's nearby Ontario er station simultaneously cut out. Ontario er had been taking electricity from Toronto er for such vital services as station lighting and nergizing of generator coils.

e cause: another pole-top fire. Pole after pole into flames that day, keeping repair crews on run and operators busy finding alternative s to stricken customers.

e phenomenon of pole-top fires is commonto electrical utilities from Hawaii to Helsinki. atop a well-trimmed and weatherproofed h of western cedar or jackpine results from ing more mysterious than a breakdown in line

ulators work perfectly well when they're and dry. Over a prolonged period of fine ener, however, they collect a coating of dust, fir salt from the roads or in coastal areas from a, and other pollutants poured into the atmost

In it rains. A deluge will wash the insulators ; light drizzle, heavy fog, wet snow or contion simply dampen the deposits to form a defective conductor. Current flows over the

insulator, along the wet wood of the crossarm and down the pole to earth. But in so doing it has to pass through a sheltered area beneath the crossarm where the wood is dry and therefore of high electrical resistance. And that's where most pole fires break out.

Poles equipped with double crossarms, to take the strain of transmission lines coming in on an angle, are particularly vulnerable. Double arms afford the critical area of high resistance even better protection against the elements. They also provide two leakage paths for the current.

Ontario Hydro engineer Walter Inkis has done some calculations. "It's like having anything from a 100-watt to a 1,000-watt heater at the top of the pole," he says.

A pole may smoulder for hours. But once flames start licking the crossarm there's only 15 or 20 minutes left. The wood burns through, the charred mass topples and drags the cables with it. Another line is out of service.

Pole-top fires are such a growing problem that Ontario Hydro recently launched a full-scale program aimed at reducing their occurrence to an absolute minimum. Considering that Hydro maintains more than 11,000 miles of wood-pole transmission line, the size of the problem is apparent.

Statistics on the frequency of pole-top fires show that most occur in areas of heavy air pollution. Sarnia, Windsor, Welland, Hamilton and Toronto are among the worst.

Hydro engineers have come up with several remedies to ease the problem, which is compounded by increasing air pollution. One is to avoid the use of double crossarms altogether, and where lines go off at an angle suspend them from specially guyed insulators hanging directly from the pole.

New poles with double crossarms are also being equipped with an improved type of metal bonding which allows any leakage of current to by-pass dry "shadow" areas and find its way to earth, and with metal plates that increase contact between crossarm and pole. Improvements like these will be incorporated on most existing poles over the next two years.

Other alternatives are possible. Near heavy industry, for example, the British smear grease over their line insulators. But this raises cleaning problems. Ontario Hydro uses grease on some line insulators near cement and gypsum plants. But once committed to grease, there is the recurrent problem of cleaning and re-greasing.

One of the best ways of reducing the number of pole-top fires is to keep the insulators clean in the first place. This is done in the industrialized areas of Southern Ontario by washing the 27,600-volt and 44,000-volt wood-pole lines . . . live!

"It's perfectly safe," says Mr. Inkis. "We check the purity of the water supply to ensure that it's a poor conductor of electricity and our high-pressure spray breaks up into individual droplets long before it hits the pole."

For years now, line-crews have been washing insulators after extended dry spells, and were it not for this procedure pole fires would be even more prevalent.

But apart from all the inconveniences, a poletop blaze is an expensive affair. What with materials and labor, it may cost up to \$300 to replace a single burned-out pole. Which helps to explain why Hydro engineers and researchers are teaming up to prevent pole-top fires. And they are exchanging knowhow with utilities at home and abroad in a constant quest to save money and improve system security.



Washing insulators from bucket trucks in areas of heavy air pollution cuts down the fire hazard. Another deterrent is the installation of metal bands on the crossarms and poles which carry the current leakage away from the dry area and down to the ground.



electricity adds authenticity

living in the past

by Hal O'Neil

A century ago, building a flour mill other than beside the waters of a rushing stream would have been preposterous. That, however, is exactly what has been done at Black Creek Pioneer Village, a bit of Canada's heritage tucked away in the northwest corner of Metropolitan Toronto. It runs on an all-electric "waterfall."

Although completely rebuilt, Roblin's Mill looks all of its 125 years and is grinding wheat into flour just as it did before Confederation — despite the handicap of not having a stream running by.

Instead, water is released from a pond above the mill, passes through a wooden flume and spills onto a large overshot water wheel. The wheel turns a complex system of creaking wooden gears that operate the millstones while the water flows into a lower pond. Then the workhorse of the 20th century — electricity — takes over. A concealed, powerful electric pump lifts the water back to the upper level to repeat the cycle and keep the mill running.

But the pump is one of the few concessions Pioneer Village makes to the present day. Located on the Black Creek Conservation Area and opened 1960, the settlement is typical of the villages established in south-central Ontario between 1793 and 1867. Five of the village's 18 buildings have been there since about 1816, when they were constructed by Pennsylvania German settlers Daniel and Elizabeth Stong. Metropolitan Toronto and Regional Conservation Authority acquired the farm and buildings in 1958 and the Stongs' two homes, smoke house, grain barn and piggery now form the nucleus of the village.

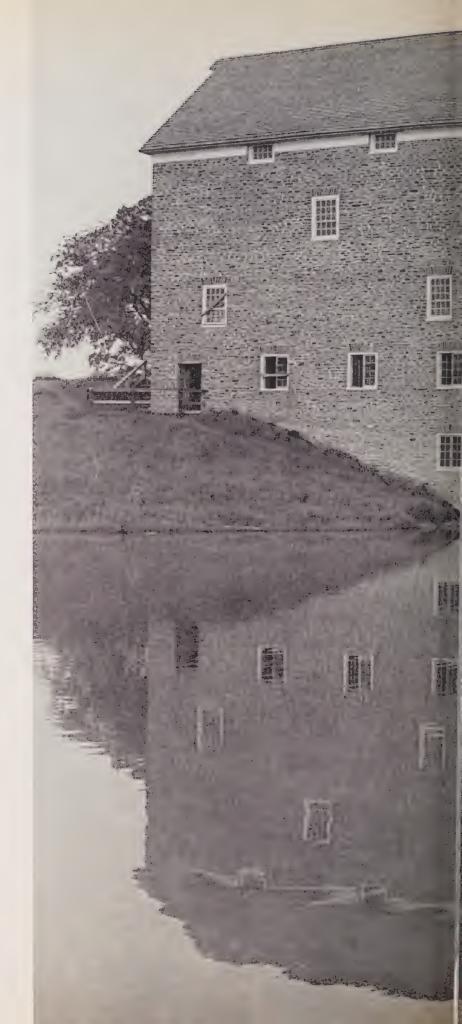
Going through the toll gate at the village entrance is like taking a time machine trip into the past. Opposite the Stong grain barn stands Henry Snider's cider mill which was built in 1840 less than two miles from its present site. In those days, they held a "bee" at harvest time. It took two men to operate the huge screw which crushed juice from the apples. Others collected the juice as it poured from the crushing box, and after straining put it into cider barrels for fermentation.

Watch your step as you tread the dusty street past the 1850 Harness Shop and Saddlery for, just as in the pioneer days, livestock is leaving its

Now you're in front of the 1856 Laskay Emporium, with its "boom town" front heralding groceries, hardware, paint oils, dry goods, clothing, boots and shoes. This general store served the area around Laskay from the day it was built until 1960 when it was relocated six miles southeast at Pioneer Village.

Crammed full of items that were bartered for and sold, there's little room left over for the post office at the rear. If she's not busy, the long-skirted clerk may be making up a pomander by inserting cloves and other spices into an orange. Hung in a closet, the pomander gives a pleasant aroma to stored clothing.

Next door stands the Washington flat-bed press, circa 1825, on which the local newspaper *Pioneer Press* is printed. The same type of press was used by Toronto's first mayor, William Lyon Mackenzie, to print *The Colonial Advocate* which helped









The sights and sounds of 1867 emanate from Pioneer Village, whether it's the creaking mill, barefoot boys trudging by Burwick House, the clerk making a pomander in the post office or the dining room at Half Way House.



rouse the population to rebellion in 1837.

At Half Way House, the visitor is likely to find the scullery maid sweeping the broad front porch with a home-made broom resembling a corn stook. Inside you might almost expect to find a driver sitting in a corner of the taproom talking to some cronies over a pint of ale while the blacksmith across the road shoes the resident oxen, Broad and Bright.

And at the back of the inn you'll smell the bread dough rising in bowls. Fifteen loaves are baked each day in an outdoor oven near the inn. Everything at Half Way House is the same as it was in 1848, when the inn opened its doors on the Kingston Road, east of muddy York. The only exception is the quiet warmth of electric cable heating, ideal for restored buildings because it is completely concealed in the ceiling.

Turn left, head down the hill and you pass Burwick House, which was built in 1844 and is Pioneer Village's most gracious residence. It is typical of homes owned by professional men or wealthy landowners of the era. Beautifully proportioned, it has eight rooms with a kitchen and adjoining scullery. In the dining room is Chippendale and Sheraton furniture, reflecting the Regency period. Persian rugs and handwoven carpets cover the floor and Adams, Coalport, Derby and Spode china is found on the shelves.

Sounds of children at play come from the Dickson's Hill School, tucked behind the traditional elm's protective branches. Barefoot beaus lounge in the grass and little misses (the children are from North York schools) sit demurely on hewn log benches until a bell wielded by the schoolmaster summons them inside to slates and the curriculum of Egerton Ryerson, Ontario's superintendent of education from 1844 to 1876.

Across a rise in the road stands the mill, which cost the authority an estimated \$200,000 to establish. Stones from nearby Black Creek were used for the walls while the working parts came from an historic mill built by Owen Rob!in in Prince Edward County, in 1842. Then, as now, the two runs of millstones spin 100 times a minute and are capable of turning out 100 barrels of flour a day.

Facing the upper millpond is Fisherville Church, a fine Ontario example of Greek Revival architecture. Built in 1856, a few miles to the east, its high pulpit and box pews illustrate the simple and austere life of the era.

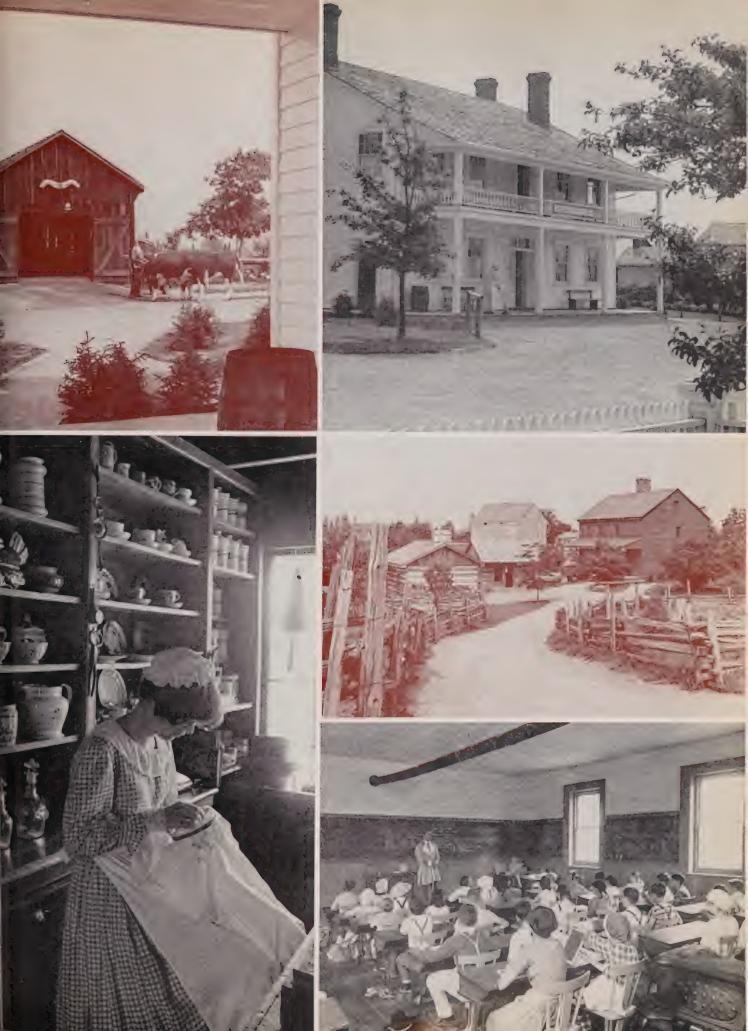
A ride in a Conestoga wagon along the bank of the creek takes you to the last of the buildings, the Dalziel Barn of 1809 vintage. Standing on its original site, the barn is now a museum containing exhibits of a sugar bush, flax processing, wood working, a cooper's shop and a large collection of 19th-century toys.

All in all, Black Creek Pioneer Village is a pre-Confederation showcase well calculated to impress modern moppets with the way in which their ancestors had to get by without electricity. Among the 150,000 annual visitors, few know how this modern form of energy helps make the scene even more authentic.

As they did a century ago, teacher's bell summons pupils to class, oxen bawl as the blacksmith checks a shoe, the maid sweeps the porch, the store clerk passes time with embroidery and cook mixes dough for bread.







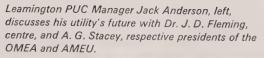
kilowatts in the crystal ball

Delegates pour from the conference hall for a breather. Seen below are J. Ross, Whitby PUC; J. E. Fielder, Phillips Cables; J. S. Shand, East York Hydro; W. B. Ball, Sangamo Co; and Mayor True Davidson, East York.





of the conference was the town of Leamington e local PUC came dressed for the part. Comn top hats and vests are Robert Mills, Harvey ee, Les Pridding, J. L. Graham and Chairman t Leslie.







eu delegates put the chasis on tomorrow

han 500 Hydro delegates converged on all last month for the summer conference of sociation of Municipal Electrical Utilities.

John of their thinking was directed towards posite end of the province.

usiness-packed days were largely devoted town of Leamington, focal point of the County food-processing industry. And electrical experts explained how they would ith the local utility's growing pains over xt 20 years, no one paid more attention le stars of the conference — the comners and management of Leamington PUC.

tations covered a variety of fields includrketing, load forecasting, distribution ments and problems of finance and wer. Speakers hammered home their with fancy dress, pistol shots, electronic and a general barrage of psychedelic

on explains that the town was chosen by accident — as a case study to serve ide for other utilities in charting the future.

"I happened to have a few hours to wait for a train one day and was invited to sit in on an AMEU planning meeting," he said. "They were searching for a theme for the summer conference and I mentioned that Leamington had an official plan and a traffic study forecasting road requirements up to 1985. It was decided there and then to feature the town."

After the conference, Mr. Anderson said he had found the sessions extremely useful although he would have to correlate the results with his own knowledge of local conditions. "Some of the suggestions may not necessarily apply to Leamington, but the methods used will certainly help me a great deal in developing a long-range plan for the town," he commented. "I'm sure other utilities will benefit as well."

Emphasis throughout the conference was on the future. In his keynote address, AMEU president A. G. Stacey, of Guelph, predicted that by 1980 the majority of new homes would have electric heating. He foresaw increasing interest in electric-powered automobiles and the development of new methods of producing electricity. But he felt that compact individual energy sources would never replace the centralized system of generation.

"Some of our present customers may look with anticipation toward the day when the black box energy source installed in the basement will supply their power needs for a lifetime," he said. "I would suggest, however, that the per kilowatt

cost of individual units will never drop enough to render distribution systems obsolete."

John Brittan, director of apparatus advertising for Canadian Westinghouse, followed up the futuristic theme. He predicted air-cushion trains by the year 2001, magnetic cars zipping along roads magnetized to the same polarity, the battery-propelled car as the family's third automobile for town driving, and welding and metalwork done with laser and electron beams.

"Letters will no longer be carried by train and plane," said Mr. Brittan. "Instead they will be transmitted from the sender's post office by wire — almost like a telegram — reproduced in a split second at the receiver's post office and then delivered locally. Mail sent in Vancouver in the morning will, of course, be delivered the same day in Montreal."

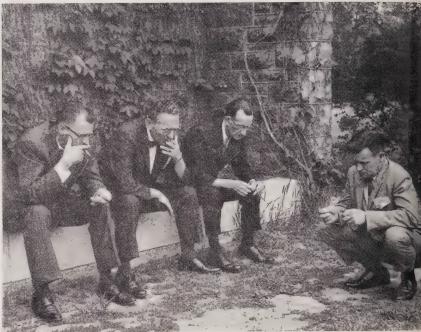
Mr. Brittan forecast that nuclear reactors would eventually be built in the ocean deep. "The water will serve as a coolant and as a wonderfully efficient and inexpensive nuclear shield."

H. J. Murphy, manager of Barrie PUC, told delegates that the electrical industry had expe-

Last year's AMEU president E. F. Burbank of Toronto Hydro talks over utility problems with J. Duckworth of Canadian Westinghouse.



Taking time out for a chat and a smoke are L. F. Ounsworth, J. Cunningham, Mayor T. Ryan and Manager J. A. Middel - all of Harrow Hydro.



rienced a change in recent years from a seller's to a buyer's market.

Waiting for new customers to increase their use was not the best course of action when electricity had virtually saturated the effective demand for such basic needs as lighting, radio, television, cooking, food refrigeration and clothes washing.

More effort was needed, he said, to increase "horizontal" penetration of the existing market. This meant seeking ways to increase the consumption of present customers with new service applications and by promoting the old applications more effectively.

L. V. Skof, Ontario Hydro manager of marketing research, said the electrical industry faced more than competition from gas and other sources of energy.

"We have had competition from boats and outboards for years and learned to live with it," he said. "Now we have snowmobiles, holidays in the Caribbean, Hawaii or Europe, all scrambling for that part of the customer's dollar the tax collectors missed.

"As our customers get more and more leisure it will cost them more money to enjoy this leisure,

and consequently a continually smaller share of their discretionary spending will come to Hydro coffers unless we enlist all our resources and allies to reverse these trends."

Discussing manpower planning, N. H. MacKinnon, secretary-manager of Sudbury Hydro, said that utilities would have to adjust to a changing attitude on the part of the employee.

"He is no longer driven by economic determination. He is no longer completely preoccupied by working and earning. He is also protesting against the impersonal atmosphere - as one industrial psychologist called it 'the dehumanizing treatment of organization' --- as he strives for recognition and the feeling that he matters in the scheme of things.

"My expectation is that there will be a much greater turnover of employees in the future. primarily as a result of the changing attitude of people as they search for a feeling of personal fulfillment in their work."

He added: "This could develop into a major indoctrination and training chore for our industry as the improving social security provisions of each community will permit the more idealistic worker to jump from job to job in search of this vocational fulfillment."

At the annual meeting of the Electrical Utilities Safety Association, held in conjunction with the AMEU conference, manager H. G. Flack said that last year his staff travelled 138,000 miles by automobile and 23,000 miles by air promoting safety across the province.

He said that 126 of the 180 member utilities completed the year without a compensable injury. Low accident-frequency awards had goi to Sudbury, Lindsay and North York Hydros.

The retiring president, C. S. Phelps, said that 360 men last year attended EUSA training courses. "It has been found that safety is not a separate subject. Safety is a way of life and must be taught and learned along with the development of skills," he said.

New EUSA officers are: president, H. W. Little, Brockville PUC; past president, C. S. Phelps, Sarnia Hydro; vice-president, J. L. Tron, Pembroke Hydro; manager and secretary-treasurer, H. G. Flack. Directors: W. M. Hogg, Dr. C. I. Bacon, G. R. Davis, N. A. Grandfield, V. Jones N. H. MacKinnon, K. L. Miller, W. R. Pfaff, H. J. Schmidt, John Torrance, Howard Powell and E. Ounpuu.

ilities look at computers

anel refereed a free-wheeling session ta processing. Left to right: D. J. Black, loo; A. M. Moore, Oshawa, moderator; .J. Horsley, Burlington.



These capable hands will guide Eastern Division affairs in 1967-68. Left to right are T. W. Elson. Barrie, vice-chairman and program director; Richard Symonds, Port Hope, director; G. D. Chambers, Gloucester, director; Don Best, Peterborough, secretary-treasurer; John Borrowdale, Oshawa, chairman; and Jim Fooks, Kingston, past chairman.



accounting and office administration group meets in Oshawa

Money talks but it also gets talked about - as was the case in Oshawa recently when the Eastern Ontario Division of the AMEU's Accounting and Office Administration Section held its 16th annual conference. Terms like "estimated net income" and "assets over liabilities" prevailed as the vital world of utility financing and accounting was explored from a number of angles.

A highlight of the two-day business sessions was a panel on data processing for billing and its role with the smaller utility. Moderated by A. M. Moore, Oshawa, the panel included R. J. Horsely, Burlington, and D. J. Black, Waterloo.

With some 8,500 customers of all classes, Waterloo PUC is using the Guelph Hydro data processing system for all its billings. Burlington PUC has over 18,000 customers and utilizes a commercial data processing centre in Hamilton. Discussion centred on the relative merits of the two approaches and on the economics of EDP vs conventional billing equipment.

For the most part, delegates agreed there was no magic number of customers at which point EDP became economical. They thought it should be considered when growth dictated additional staff and major new equipment.

Bert Elder, of Ottawa Hydro, was more explicit. He advised utilities with less than 10,000 customers to forgo EDP and to examine the latest billing machines available. He said these now incorporated many automatic features and that the manufacturers were prepared to set up suitable systems.

In summary, John Borrowdale, Oshawa, the new chairman, said: "This session has provided food for thought -- you may weigh the divergence of opinion expressed here but it's up to the individual utilities to get out and dig up the facts for themselves."

Operating forecasts were the subject of a second panel on which Don Best, Peterborough, Bill Hales, Belleville, and Hugh Beach, Ontario Hydro, fielded a host of questions mostly relating to estimating procedures.

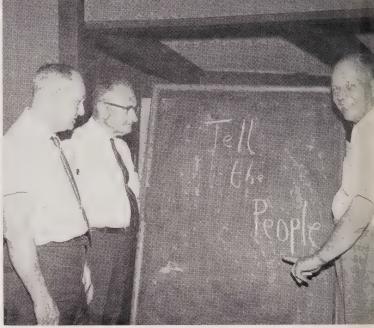
Hydro's complex financial structure was explained in easy-to-follow terms by K. C. Coleman, Central Region accountant. His remarks ranged from the influence of stream flows on contingency reserves to the effects of load growth on revenue, costs and assets.

tell the people

District 5 President W. F. Rannie, Beamsville, sets the PR theme. He is flanked by Arthur Bennett, St. Catharines, left, and Andrew Frame, Burlington, who outlined PR progress.



Three delegates at the Burlington meeting get the PR message. Left to right are: James Wincott and C.K. Pearson, Niagara Falls commissioners, and John Dawson, manager, Dunnville PUC.



it was all at district 5 OMEA

The determination of the electrical utilities of Ontario to improve communications with the public was very much in evidence at the District 5 OMEA summer meeting in Burlington. Virtually the entire agenda was devoted to public relations.

Setting the theme in his welcoming address, District 5 President W. F. Rannie, Beamsville Hydro, said that this year, and for many years to come, there would be an emphasis on an OMEA activity which was new to many. He said the slogan "tell the people" was a call for "better, more comprehensive public relations than we have known before".

"It is perhaps strange," Mr. Rannie continued, "that only in this Centennial year, when all of Canada is alive to itself and every one of its familiar institutions is putting forth its best foot in honor of a great moment in our history, that our own Hydro utilities have become aware of their 'facelessness' in the community."

He said the one vital concern underlying formation of the new OMEA-AMEU Public Relations Co-Ordinating Committee, and the district PR committees, was the day-to-day relationship of the individual utility with the public it serves.

Mr. Rannie paid tribute to the late C. R. Buss, chairman of Thorold PUC at the time of his

death. He said Mr. Buss was a former president of District 5 "and a constant leader of our affairs. He leaves a gap which will be hard to fill."

Sketching the background leading to the association's action in the field of public relations, D. P. Cliff, 1st vice-chairman of Ontario Hydro, said that the municipal utilities of the province had failed to maintain the high degree of public understanding Hydro enjoyed in its early days and had allowed themselves to be taken for granted. He said recent recommendations to abolish utility commissions and turn their powers over to councils lent emphasis to this failure.

"The dimensions of the problem have been recognized," Mr. Cliff stated, "and the response is being put together.

"You have the awareness, you have the technical services at hand to translate plans into action. Your most difficult task and your most illustrious achievement will be awakening every member of the municipal utility organization — from the largest to the smallest — to the need for active participation in the public relations program."

Breaking with a tradition in which the OMEA president reviews association highlights at the district meetings, Dr. J. D. Fleming, Dundas, devoted his remarks to the need for rekindling

public interest in Hydro through an appreciation of the basic concepts of public power in the province.

Recounting pre-Hydro days in which municipal representatives had petitioned for the delivery o low cost electric power to their borders, Dr. Fleming said the underlying principles were as sound today as they were then. He said the system's quiet efficiency had caused public interest to wane — a situation the present PR program was designed to remedy.

Dr. Fleming also took the opportunity to sugge: a positive approach in relation to rate increases should they occur. "Instead of blaming Ontario Hydro for something over which they have little control," he said, "turn it to our advantage by pointing out what a great bargain electricity still represents."

He said it was a good opportunity to demonstrate the "Hydro family" concept in action.

Andrew Frame of Burlington gave delegates a detailed account of an earlier meeting in Toron where representatives of the district public relations committees had convened with the coordinating committee on PR in a day-long workshop session.

Among the points that emerged in hammering out guidelines for the PR program at the Toron meeting was the importance of the housewife in a utility's operations. She outranked service clubs and civic authorities, Mr. Frame told delegates, in a poll conducted among the 50 people attending.



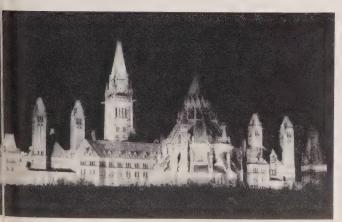
oking up

the consumption of coal forecast to rise, Ontario Hydro has red into agreements covering the delivery of more than five on tons between 1968 and 1972. These agreements cover part of the total needs of the next five years which will range 6,000,000 to 9,000,000 tons a year. With demands for er continuing to increase and almost all hydraulic sites essed, coal-fired stations will be providing about 40 per cent ydro's generating capacity in 1972.

ne agreement provides for continuation of the contract with Dominion Coal Company for the delivery of 750,000 tons of a Scotia coal to Toronto each year. Terms and conditions be identical to those of the last five years in bringing eastern to Ontario at a price equal to the average cost of U.S. coal ered at the same dock.

nother agreement covers the delivery of 1,400,000 tons from hem Pennsylvania Incorporated between 1968 and 1972 a third contract calls for delivery of 38,000 tons of low nur content coal this year. This is for use at the Richard L. n station on Toronto's waterfront during adverse meteoroal conditions.

on the hill



g in the Centennial limelight.

night this summer, Canada's Parliament buildings go up nes, just as they did in 1916. But it's all part of a sound and spectacle playing the nation's capital as part of the Centel celebrations.

rctators, surrounded by stereophonic sound effects, watch tg lights play on the Parliament buildings from a terraced on Nepean Point. Some of the events re-lived through

sound and light include Confederation, the First World War, and the great fire which destroyed the central block in 1916 and the march of the unemployed in the 1930s. The production is said to be one of the largest and most outstanding of its kind in the world and is the first to focus on a national parliament. Cost of the spectacle, including the observation gallery which seats 1,000, runs into the \$200,000 range.

Guelph aglow



Light year 1967.

The City of Guelph takes a back seat to nobody. Like many other Ontario municipalities, the downtown area is festooned with light to herald the nation's one-hundredth birthday.

An estimated \$5,000 went into the crowns, maple leaves and Centennial symbols that adorn light standards. Guelph Hydro donated their vehicles and men to set up the eight-block display. And the city's heart — St. George's Square — provides a fascinating night panorama. Even the local utility's sub-station has been decorated with lights this year.

Airborne brigade

Over the last few months, Ontario Hydro helicopters have been pressed into service to help fight forest fires across Ontario's northland. The aircraft were commandeered by the Department of Lands and Forests to ferry men and supplies from operations bases to the fire areas.

At one point in June, when the communities of Sioux Lookout and Chapleau were threatened, four of the "whirly birds" were helping firefighters. Hydro lost a six-pole span on the 44,000-volt Dryden feeder line to the fire at that time, interrupting power for nearly two hours.

So far this year, more than 50,000 acres of forest have been lost compared to 14,450 acres in the whole of 1966. According to Lands and Forests, most of the damage can be attributed to carelessness.

Kudos for new look

Hydro's "new look" won a unanimous vote of approval from an all-American jury of eminent designers and creative people at the Canadian Graphica show held in Montreal. Of the 3,500 entries only 200 pieces were selected for the exhibit and just 13, including Hydro's, won awards of excellence.

Hydro's winning entry was in the category "Corporate Design Program." For top honors, entries required unanimous approval of the judges.

Ontario Hydro's Public Relations Division has been working closely with Hathaway — Templeton Limited in implementing the new corporate image program. It involves the now familiar OH



Symbol of success.

symbol for Hydro in Ontario and embraces type faces, corporate colors and design formats in a wide range of applications.

Examining the citation are James A. Blay, left, Hydro's director of public relations, and H. J. Sissons, assistant general manager-

Among the items submitted by Hydro for the contest were illustrations of vehicles, stationery, a Christmas card and a selection of Hydro News covers.

Earlier in the year, Hydro won a vehicle color design award for one of its "new look" trucks. Open to all fleet owners in Canada and the United States, the competition stressed eye appeal, product or service identification and road safety.

Handy handbook



Hot off the press.

An Ontario Hydro reference book on farm electrification received a citation at a recent meeting of the American Public Power Association in Denver, Colorado.

The manual, which took two years to compile, is for use by electrical contractors, distributors, manufacturers, equipment dealers and Hydro personnel. It is the basic textbook for an eight-week farm electrification course being organized across the province by Ontario Hydro.

Seen reading part of the manual as it comes off the press are W. R. Milne and J. G. Webber, both of Ontario Hydro Farm Sales and joint authors of the handbook, and J. E. Moles (centre), Farm Sales manager.

One step nearer

Ontario's newest hydro-electric project came a step nearer to reality with the announcement that Ontario Hydro has engaged H. G. Acres and Company of Niagara Falls, to supervise construction of the station at Lower Notch, on the Montreal River near Cobalt. Virtually all the work will be done by contract.

The company will be responsible for the layout, design a supervision of the 244,000-kilowatt station. The job should completed in 1971 and is expected to provide employment up to 500 men. Hydro has contracted out similar constructions jobs in the past.

municipal briefs

Chivalry is not dead. St. George and the monster fought it recently in the confines of a Scarborough "castle" yard. And knight in the person of PUC meter reader George Richard won the royal order of the garter. Screams of a damsel in dist (Mrs. David Clark) brought the knight, girded with borrow shovel and rake, to her backyard. After a 15-minute battle hero slew a three-foot garter snake and the lady was able return unscathed.

Two Whitby boys, John Porter and Scott Smith, who won pu speaking contests, were honored for their achievements by to council. In presenting medals to the pair, Mayor Desmond Ne man said they had brought honor to both themselves and town in winning the Hydro-sponsored competitions.

Five Windsor Utilities Commission workers have received let of commendation for their quick first aid action. The letters w authorized by the commission when General Manager G Fisher reported that the five - Raymon Skene, William Mod Eugene Predhomme, Reginald Morley and Robert Farrel "probably saved the life" of a man injured in an auto accider Lightning heavily damaged Picton PUC equipment during one the worst storms to hit the town in years. A direct hit on a tw year-old sub-station blew fuses off their mountings, bur holes through metal housings and sent a tremendous su through the main transformer. Firemen were called when structure burst into flame. Power was interrupted for 15 to minutes until the load was shifted to a second sub-station, s H. D. C. Blakely, PUC manager. Elsewhere, street light bu relays and distribution transformers were damaged.

No blame was placed and no negligence found by a coron jury after an inquest into the death of a North York Hydro linen Roly Vancours, 26, was killed instantly when he touche 27,000-volt conductor while working on a pole.

Port Arthur PUC personnel have a new plaque to their credi was presented by the Canadian Highway Safety Council fo outstanding improvement in safety operations during 1966. service to safety" is the award's theme.

Etobicoke Hydro is looking for "the right young lady." She'll as official hostess to its 80,000 customers, visiting hor schools, institutions and industries during the day and der strating cooking, laundering and lighting a few nights a wee the utility's new auditorium.

William M. Hogg, president of the Great Lakes Power Comp has been honored by the citizens of Sault Ste. Marie at a to monial dinner. Since taking up his present position 10 years Mr. Hogg has served as president and director of the YN chairman of the Algoma Homes for the Aged, member of Algoma College Association board and president of the Char of Commerce. In reporting the dinner, the Sault Daily Star Ca him "one of the city's most public-spirited citizens." Almos his life, Mr. Hogg has been connected with the power indu As a boy he toted drinking water during construction of the Adam Beck-Niagara No. 1 power station. He served Ontario Hydro during his summer vacations from school after graduation from the University of Toronto in 1939, or full-time staff. Before leaving the Commission in 1957 he field project engineer of the St. Lawrence power project.

t Scarborough PUC employees got an unexpected bonus at utility's Quarter Century Club dinner. The group had donated relief fund started 36 years ago by PUC employees to help ens during the depression. Since it had been decided to olve the fund, the remaining money (\$52) was returned to e still on the staff who had contributed. One of the group, Douglas, meter department supervisor, received a gold watch is 45 years of continuous service.

uring the 1930s, when PUC customers got behind in paying power or water, money from the fund was used to pay the Several hundred families benefited from the fund, which at time totalled several thousand dollars.

ley R. Greenwood will be superintendent of the soon-to-beed Vaughan Township Hydro system. Mr. Greenwood was erly manager of Weston PUC, which merged with York o at the end of last year.

w general rate, developed in 1965 through a co-operative y by the AMEU Rates Committee and the Rates Research artment of Ontario Hydro, has been adopted by 10 more icipal utilities. Applicable to commercial and industrial cusers with all kinds of businesses and all types of loads, the structure has been used by Cannington, Pembroke, Stratford, ngton and Windsor for some time.

Mabley is getting established in the newly-created post of rintendent of Port Perry Hydro. Mr. Mabley notched up 13 experience with the now defunct Weston PUC before

ng to Port Perry.

a Hydro has published its history in brochure form. Comby Commissioner J. T. Barnes as a Centennial project in ection with the Hydro Hall of Memory, it covers electrical enings from the introduction of street lighting in 1893 until resent. The utility has distributed copies to the news media, business and industry. Copies are available on request.

ncoe, "pie plates" will soon be a thing of the past. Pie plate term used by Mayor Alfred Judd to describe the ceramic reflector and 200-watt incandescent type of street lighting. only two left in the town will be removed as part of a \$13,250 lighting modernization plan approved by council.

stville Hydro is buying three lots and a building and plans to ruct an office, garage and warehouse on the property. Its nt building, which adjoins the town hall, is needed by the

erstburg PUC, prompted by expected residential load growth he possibility of amalgamation, is purchasing a lot next to sent offices. The \$15,000 property, which contains a house, nly provides for expansion but will permit direct access to UC storage yard and garages. At present, vehicles must railway property.

Dawson, manager, Dunnville PUC, is Canadian representathe conference of the International Electro-Technical Comon Meters being held in Czechoslovakia.

single lost-time accident was reported within a 200-mile of North Bay, Northeastern Region delegates of the AMEU old at their West Ferris meeting. Twelve utilities received cates of merit at the meeting.

ie-man show

(vcastle personality who for years ran a grocery store with and and the local Hydro system with the other has retired Tage of 76. And this June the community turned out in o give Harvey S. Britton a well-earned "thank you."

in Newtonville, five miles east of Newcastle, Mr. Britton his career at the age of 14 as a lineman and troubler with the Port Hope Telephone Company. He later became ampany's president.

a short time building power lines for the Seymour Light ower Company and for Welland PUC, he moved to New-



A one-man Hydro band.

castle to take over a grocery and bakery business. Then, in 1918, he started to carry out part-time meter reading, maintenance, street light installation and bill collection for the local Hydro system. With the formation of Newcastle PUC some 20 years later, Mr. Britton took over full operation of the system and did the work single-handed until 1956.

Mr. and Mrs. Britton are shown receiving a citation at the June reception from former Ontario Hydro Chairman W. Ross Strike, on the left. With them is Mr. Britton's successor, Newcastle PUC manager Tom Messenger.

Research director retires







Hugh C. Ross, Director of Research for Ontario Hydro since 1957. retired June 30. He has been succeeded by John H. Waghorne, former engineer-in-charge of the division's Electrical Research Department.

A 39-year veteran of Hydro, Mr. Ross spent his entire career in research. He graduated from the University of Toronto and joined Hydro as assistant testing engineer, subsequently serving as supervising engineer and engineer-in-charge of the Structural Research Department. In 1953 he was appointed assistant director and, four years later, director.

Mr. Waghorne started with the Commission in 1940 as an assistant research engineer following graduation from Queen's. He was chairman of the Certification Board for Engineering Technicians and Technologists from 1961 to 1963, and president of the Association of Professional Engineers of Ontario in 1963.

A pumping good race

"She came pounding down the track doing 10 miles an hour" . . but it was enough to win a race for a team from Ontario Hydro's Lakefield area office. And an unusual race it was. Employing the last 10 railway handcars in the Canadian National Railways sys-



They won by a whisker.

tem, 56 teams raced along three miles of track at Lakefield as part of the Peterborough Lions Club Centennial celebrations

Attired in traditional Casey Jones outfits, Ed Sutton, Bill Gibson, Ross Wiles and Keith Smith covered the six-mile round trip in a little over 18 minutes. In the process they beat out teams headed by NHL players Bryan Watson, of the North Stars, Dennis Hull, of the Black Hawks, and Arnie Brown from Rangers. The only letdown was the weather. Wind, rain and cold dropped the expected crowd of thousands down to hundreds.

Long tailrace

An additional power plant to be built near the George W. Rayner hydro-electric station on the Mississagi River about 10 miles north of Thessalon has been named Wells generating station after the local township. It will have a capacity of 215,000 kiloatts when completed in 1970

Although the Wells plant will be located only 1,000 feet from the Rayner station, the two will operate independently from the same headpond. Notable among the new plant's features will be the length of the tailrace — 3,500 feet — for returning the water to the river.

New legal chief





W. E. Raney

Lorne R. McDonald

W. E. Raney, Q.C., has been appointed General Counsel and head of Ontario Hydro's Law Division. He succeeds Lorne R. McDonald, Q.C., who retired July 1.

Mr. McDonald joined Hydro in 1953 as Deputy General Counsel and was appointed General Counsel two years later. Because of his special knowledge of Commission activities, he will be retained in a consulting capacity.

A 19-year Hydro veteran, Mr. Raney has been Deputy General

Counsel since 1960. Before that he carried out a variety of assi ments, including solicitor-Boards and Commissions. He was m Senior Solicitor in 1958. Three years ago he was appointed Queen's Counsel. During World War II he served with the Ro Canadian Navy in the North Atlantic, English Channel and I

A native of Hamilton, Mr. McDonald received his early edu tion in Regina, Saskatchewan. During World War II he serve the United Kingdom, the Mediterranean area and Northwes Europe. In 1945 he received the OBE then worked for the Ont Government before moving to Hydro.

A boost to boating

Two old and picturesque locks on the Trent waterways have appeared. They have been replaced by a single lock with e trically operated gates.

Located at Burleigh Falls, north of Peterborough, the old lo were too slow and the Department of Transport decided to cha them to a single one with a lift of 24 feet to cope with increase water traffic.

Igloos and kilowatts

The age-old craft of Eskimo ceramics is in the throes of rebirt the tiny settlement of Rankin Inlet on Hudson Bay. For years Eskimos there have tried to turn out successful pottery. T possessed the clay and knew its usefulness, but they could

Now, with electricity, the pieces of earthenware are f around 1,900 degrees in small electric kilns.

Recently, some of the fruits of Eskimo labor were displaye Toronto. A strange and beautiful display, it showed many fa of Arctic life.

Technical Talk

Copies of the following papers can be obtained from the Pu Relations Division, Ontario Hydro.

Lake Erie-Niagara Ice Boom, by George T. Berry, Power Author of the State of New York, and John B. Bryce, Ontario Hydro 6 eration Projects. Given at the Congress of Canadian Engine Montreal, May 29 to June 2.

Electricity in the Community (a look at what's ahead for industry in relation to the public), Henry J. Sissons, Ont Hydro assistant general manager-Services. Given at the Cana-Electrical Association Annual Meeting, Murray Bay, Que

Fire Hazards of Polymers (plastics and rubbers), by B. Kel Ontario Hydro Research. Given at the Fire College, Gravenh Ontario, April.

May energy production

Primary energy provided by Ontario Hydro in May totaller 4.20 billion kilowatt-hours, an increase of 6.8 per cen over the same month a year ago.

For the first 5 months of 1967, the total is 21.76 billion kilowatt-hours, up 7.9 per cent over the same period las year. Adjusted for seasonal influences, primary energ demand in May was 4.32 billion kilowatt-hours, 2.5 pe cent more than the previous month.

The seasonally adjusted total for May represents 51.8 billion kilowatt-hours at annual rates. This is 372.80 p€ cent of the energy demand in 1949.



as don wright sees it



ockey has its Eddie Shack, football its Angelopsca and politics its Joey Smallwood — all le participants in their chosen fields but with extra tiger in their tanks that adds something ecial in the way of performance and makes the me a little more interesting. Our vote for the dro equivalent goes to John Dawson of nnville.

John manages a utility with only 2,000 cusners but does it with such energy and eland the's known in Hydro circles from Atikokan Zurich and is frequently called upon to enternas well as instruct at association getypethers. At home, of course, he's Mr. Hydrod his ability to get things done with the least saible strain on commission purse strings is preciated as much as his refusal to take himself periously.

But we aren't concerned here with his bargain sement shopping on behalf of Dunnville PUC do we intend to disclose his secret formula for iverting laundry tubs and Sherman tanks into t-class bucket trucks.

n fact, we hadn't intended to talk about John wson at all — we wanted to hold forth on the bject of power poles and pussy cats. But you i't get very far along this line of research ore John's name crops up. Build a better cat it seems, and the grateful world of Hydro men will beat a path to your door.

hasn't quite come to that yet but if John's st invention does catch on, standard line to ke equipment will include a can opener and a of Puss n' Boots. It's a kind of portable cat se designed to solve the utility nightmare light about by frightened felines seeking ge up power poles to the detriment of neighthood tempers and utility public relations.

o far as we can determine, John is at least per cent in earnest about the whole thing, vch is about as close as he ever comes to being (mright serious. As usual, he makes a lot of

a nutshell, the catsnatcher consists of a box plastic top and sides just big enough to

harbor a tom in the prime of life. The box fastens quickly to the end of a standard, non-conducting hot line tool and when baited with a tasty tidbit or two and hoisted up to the pole sitter, is said (by its inventor) to work every time.

Sounds simple enough but a lot of thought went into its manufacture. It musn't be so large as to let the cat turn around inside as this would complicate balancing the pole. A piece of carpeting on the floor provides a homey look and enables the tenant to "dig in" on the trip down. Even the opening in the end has a purpose. It improves circulation and helps waft the aroma of goodies to the one on high.

Only the deluxe model shown incorporates the Hydro symbol and the inventor doubts that he has quite the right slant on things where this is concerned. He also points out that any resemblance between the four-footed model in the picture and any Persian, Abyssinian or Siamese among the audience is purely the fault of the manufacturer.

Why all this fuss over man's second or third best friend? Just leave the critters to their own devices, some contend, and they'll come down in their own good time. Trouble is, they tend to lower the utility image long before they descend themselves. They also endanger the lives of good Samaritans who are sure to appear whenever the cat-up-a-pole situation arises.

"Refuse to help in a neighborhood emergency like this," John says, "and your public relations go all to hell in a handbag. It's not the cat we're worried about but people just won't stand by and watch an animal they think is in distress. Not long ago some boy scout pulled off a rescue stunt that made my hair stand on end just reading about it. They used a ladder and a bushel basket on a dripping wet pole carrying 13,000 volts."

He figures the scouts must have borrowed a life or two from the cat's supply because they got away with it.

John isn't the kind to risk a lineman's life for a cat, public relations, or anything else for that matter.

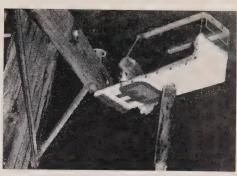
That's why he spent some time and even a little money (\$1.25) developing the Dawson Technique for the Safe Rescue of Poled Animals (DTs for short). He knows that poled cats are not to be taken lightly.

"Not long ago we decked one of the boys out in a hard hat, welder's face mask and heavy leather gloves and sent him up on an aerial platform to rescue a cat," he ruefully recalls. "Damned if it didn't jump at him when he got close and fasten on his leg like a burr. We had to pry it off with a two-by-four when he came down to earth. That's when I realized the situation demanded a new approach."

So far they're batting 1000 with the DTs in Dunnville and the system's been put to work on two occasions.

"One happened right in front of a public school at recess time," John recalls with some satisfaction, "and we really came out with flying colors."

Driving smartly up to the pole, one man quickly assembled the catsnatcher while the other snapped open the cat food with well-drilled precision. The cat scarcely hesitated and was soon borne off to teacher by a horde of highly-impressed youngsters.



Catsnatcher demonstration was a highlight of AMEU summer conference. Deluxe model is shown.

"You can't buy that kind of PR," John goes on. "In fact, we're thinking of keeping a cat just to send up poles in front of schools and other institutions after power failures and at times when the old image needs a bit of polishing."

Ingenious as it is, John regards the Dawson poled-cat technique as a temporary arrangement and he's well on his way to the ultimate solution.

Cats have been with us since the time of the pharaohs, he reasons, and good Samaritans are mentioned in the Bible so that both stand a good chance of becoming permanent members of our society. Power poles are the Johnnies-comelately in this infernal triangle and it's in this direction that John is directing his new approach. In a word, he's putting Dunnville, or at least its distribution system, underground. Eliminate the poles, he figures, and the community can live with its felines and soft hearted citizens.

In fact, John denies that cats have anything to do with his ambitious underground program, which is already 30 per cent complete. "Give me another 10 to 15 years," he says, "and power poles will be as scarce as gas lights in Dunnville."

Oh, he might keep a pole or two in front of the schools for PR purposes in case of a blackout but as he sees it, overhead lines are strictly for the birds.



Bear up, John, it couldn't happen in Dunnville. Cub was rescued from its hazardous perch by Hydro in Kapuskasing.





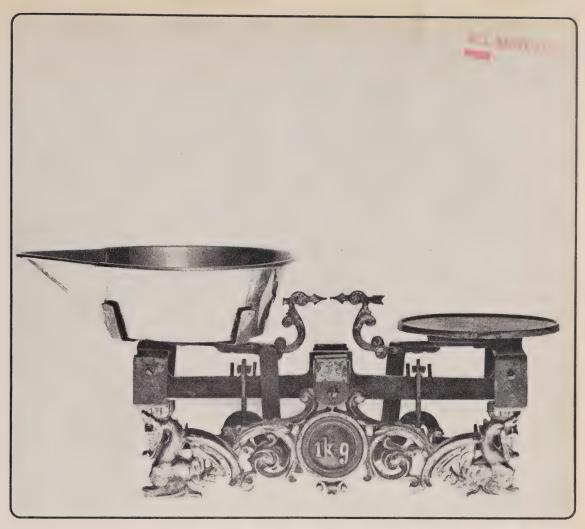
dig those tetrahedrons

Listen to people back from Expo and each will have his own idea of what's the greatest. Most rate the theme pavilions high and that's where we come in

high and that's where we come in.

The "resources" section of Man the Producer is co-sponsored by Ontario Hydro and Hydro Quebec. We introduce you to energy, the basis of technology, and you'll go on from there to marvel at what's been done with the resources.

So keep an eye out for those truncated tetrahedrons. They're geometrical forms with four equilateral sides and they're the basic construction unit in Man the Producer pavilion.



ontario hydro news

september/1967
•measure for measure
•new glitter on elliot lake
•fire is their major





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the cover

Ornate set of metric scales depicted on this month's cover came from Holland and belongs to H. D. Voss, Hydro's art services supervisor. The metric system, devised in France where it was introduced at the end of the 18th century, has since spread to most parts of the world. Some of its ramifications are discussed on page 12 of this issue.

editorial board

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CNE '67 All paths lead to Expo in 1967 but this didn't prever the CNE from coming up with one of the best performances its long history. Nor did Hydro's Expo commitments interfer with its all-star billing at the CNE where it has been pointing of the advantages of doing things electrically since 1912.

In fact, Hydro enjoyed extra prominence at the big annual fact this year through its part in the Century of Progress — the CNE Centennial year presentation. In tracing electrical progres Hydro included massive Goldie Corliss steam generator show centre. Display culminated with extra-high-voltage spectacul including EHV hardware being examined, above.

Puppets were again featured at the Better Living Centre. The took a light-hearted look at the growth of Canada since Colfederation. Further details of the show are on page 22.



electricity is much to the fore in

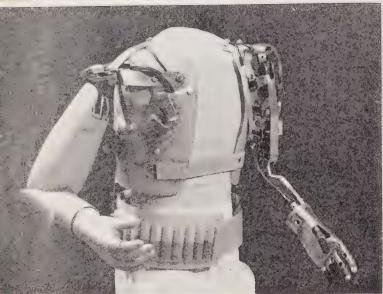
medical engineering

Colored leaves and frosted pumpkins spell October in Ontario but the familiar symbol of the United Appeal is another sure sign of fall. It's the time of year when we're all asked to dig deep to assist the handicapped — a task that becomes increasingly expensive as techniques grow more effective and sophisticated. This article suggests some of the newer ways in which electricity

is contributing.









Hospitals make daily use of an increasing range of electronic equipment while other electrical devices help the blind to "see" and handicapped children to play. Young lady on the right is using motorized arms developed by researchers at the Ontario Society for Crippled Children.

In a Montreal hospital a five-year-old girl, terribly crippled from the effects of the drug thalidomide, learns to lead a more normal life with the aid of an ingenious pair of electronic arms.

In Toronto, a male cancer patient receives an artificial eye with an experimental electricallyoperated lid that blinks in conjunction with his normal eve.

The two events are unconnected yet both represent a virtual explosion in sophisticated electronic and electro-mechanical devices stemming from a relatively new science called medical engineering.

Introduced into university graduate studies in the United States and Canada only five years ago. this branch of medicine is basically the application of engineering principles to medical and surgical

So startling is its growth that equipment sales in

North America may well reach \$1 billion a year by 1975 as hospitals, research units and welfare organizations express growing interest in aids that result from a closer liaison between the medical and engineering professions.

The Canadian National Institute for the Blind, for instance, is closely watching the development of ultrasonic guidance systems that work much the same way as sonar to warn sightless persons of obstacles in their path. It has also tested electric reading machines that translate the printed word into sound.

"These appliances are still very much in the experimental stage," says one blind person who tested a guidance device. "Sitting down, I could easily locate and identify items of furniture in a room. But when I started to walk, I was bumping into things before I could interpret the signals.'

New devices are also making life easier for victims of crippling diseases like multiple sclerosis and muscular dystrophy. Multiple sclerosis, a disabling disease of the central nervous system, afflicts 25,000 Canadians. Muscular dystrophy causes a gradual wasting of the muscle fibres, replacing them with useless fat. Both are particularly distressing because they attack young people.

One problem with totally disabled persons is the development of bed sores. To prevent patients having to be constantly turned by a nurse, therapy specialists have devised a bed that achieves the same result. Basically, the unit is a plastic pac parallel air cells that are alternately inflated deflated by an electrically-operated pump. automatic shifting of pressure points on the in effect "turns" the patient every two mi preventing bed sores.

The Muscular Dystrophy Association of C pours about \$400,000 a year into research the Multiple Sclerosis Society contributes \$100,000, Arthritis is another crippling diseas the interests of more than a million victin looked after by the Canadian Arthritis and Rho tism Society.

A research team at the University of Tor division of rehabilitation medicine is at p using an electronic device that may eventual to a special shoe for people suffering from ar The device — about the size of a dime — is under the small bones of the foot and me the pressures exerted by walking.

'We've discovered some interesting facts, a doctor associated with the project. "F stance, we thought that high heels threw a the weight forward, but the reverse is true knowledge is tremendously important be people with arthritis put most pressure on th of the foot and we may be able to design heeled shoes to offset this."

An outstanding example of co-operation tween doctors and engineers is the develo



Courtesy Globe and Mail

orthern Electric of an artificial arm for children, the aid of a built-in electric motor, the child pen or close the mechanical hand, turn the in either direction, flex the elbow and move oper arm.

project began in 1965 when Dr. Gustave as, executive director of the Rehabilitation ite of Montreal, approached the company designing an artificial arm suitable for omide children placed in the institute's care. to that time, most prosthetic appliances had designed by doctors. Northern Electric let its ch engineers in Ottawa tackle the problem an entirely mechanical point of view. They owever, maintain close liaison with the in-. What resulted was a highly successful /-powered arm with a hand instead of the inary and unsightly hook and with fingers e of holding toys and even wielding crayons. th basic work on electronic arms originated sia where prostheses were guided by muscle or myoelectric control, as it is called. It is to extend this type of control to Northern to's arm.

tr artificial limbs under development in a include arms powered by electric motors, clic systems and cylinders of carbon dioxide d artificial legs with an electromagnetic that locks the knee each time the heel comes stact with the ground.

Electronic larynxes for people whose vocal cords have been removed or become paralyzed have been in use for some time. Existing models have the disadvantage that they must be held against the throat while the patient speaks. Now research is under way into a smaller version that will fit inside the mouth, probably on a person's denture plate.

Not all the electrical aids under development consist of diagnostic machinery or extensions to limbs or vital organs. Toronto's Hospital for Sick Children plans to install a digital computer for medical as well as administrative purposes. It would be used to monitor continuous information on patients in all surgical, recovery and intensive care units.

Since the hospital first established its medical engineering department a year ago, a number of advanced projects have been undertaken including research on a minute radio transmitter that can be swallowed like a pill. As the pill travels through the digestive track it emits signals containing information on the patient's condition.

Within the next year, the department also hopes to delve into such way-out areas as ultrasonics, cyrogenics (the science of intense cold) and lasers

Funds provided by the Rehabilitation Foundation for the Disabled have assisted the development of a number of electronic aids to medicine, including equipment that tests the tensile strength of bone while providing a continuous X-ray picture of the material under examination. The foundation's doctors have also built a machine which determines manual dexterity by requiring the subject to remove pegs from holes in a rotating wheel.

Nearly 5,000 persons crippled by anything from cerebral palsy to automobile accidents pass through foundation centres each year for pyschological testing and to learn new skills that will earn them a place in society. Workshops have been established for those unable to return to competitive industry.

Electronics and the new science of medical engineering are coming increasingly to the fore in aiding the handicapped. But nothing is more gratifying than when a particular piece of equipment can be dispensed with altogether. The iron lung is a case in point.

Many polio victims owe their lives to this cumbersome apparatus. Yet with the spectre of polio virtually banished, the foundation now finds itself with a collection of iron lungs and no customers. "There can't be more than half a dozen in use across the entire province," says an official.

No one can deny that the world would be a far better place were all artificial appendages and medical aids suddenly rendered obsolete. Until that time, however, the new technology is making life for the handicapped a little easier.

new sparkle on elliot lake

by Les Dobson



Outside the municipal offices in the mining town of Elliot Lake stands an unprepossessing chunk of grey rock. Beneath it is an inscription that sums up the drama of the nuclear age. It says: "Energy contained in this ore will light a 100-watt bulb continuously for 44 years."

The fortunes of Elliot Lake have risen and fallen according to demand for this most spectacular of natural resources. The town was hacked out of rugged bush country north of Lake Huron barely a dozen years ago to exploit the rich uranium-bearing conglomerate that lies hundreds of feet below the surface.

The industry boomed in the militant fifties; fell into the doldrums in the early sixties after the United States decided to forego options to buy further uranium oxide from Canada. Now an upward revision in global predictions of installed nuclear-electric capacity has brought fresh optimism to the self-styled "uranium capital of the world."

Forecasts have indeed soared. Only two years ago, the Canadian Nuclear Association was projecting a Western nuclear capacity of 314,000 megawatts by 1985. That figure has been revised to 430,000 megawatts, due to the unexpectedly rapid expansion of nuclear power in the United States and other countries, including Canada.

The US Atomic Energy Commission has upped its own projection of installed capacity in 1980 to anything from 120,000 to 170,000 megawatts. About 53% of new generation committed by U.S. utilities in 1966 was nuclear.

Naturally enough, such forecasts are having a profound effect on the Canadian mining industry and have sparked a new fever of exploration activity. Present sources of uranium include pitchblende veins in the Beaverlodge Lake area of northern Saskatchewan and the pegmatite around Bancroft. But the urananite-brannerite deposits of the Elliot Lake area are among the world's largest.

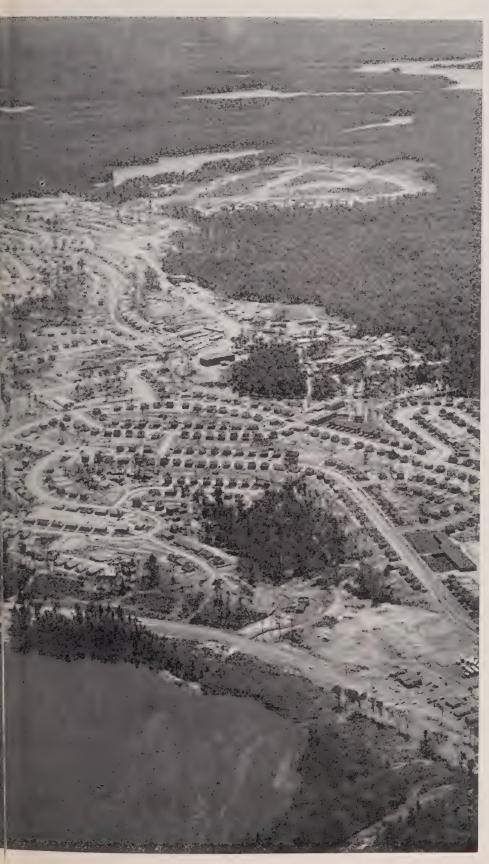
Firmly entrenched in belts of ore north and east of Elliot Lake are the two major Canadian producers — Denison Mines and Rio Algom Mines.







zards involved in handling uranium de as it leaves the mine are slight, complex equipment is needed to nipulate radioactive products used nuclear research. Other pictures w Elliot Lake from the air and the mmunity's boarded-up homes and a-modern hospital.



The area also supports a small independent — Stanrock Uranium Mines.

Denison has the option to supply 1,500 tons of uranium oxide a year to the Canadian government stockpile up to mid-1970. Its mill is capable of processing 6,000 tons of ore a day and reserves of uranium oxide are estimated at 150,000 tons. The company recently installed a new leaching circuit in the mill and also equipment to extract yttrium, an important rare earth by-product used in the manufacture of color TV tubes.

Rio Algom is at present milling 3,700 tons of ore a day at its Nordic mine. Plans are in hand to temporarily discontinue production at Nordic and switch to the company's mine at Quirke Lake, where the grade is higher. The old Quirke mill is being renovated and expanded to match Nordic's capacity and a new shaft sunk. Other mills in the area will likely be re-opened to help meet the demand of the seventies.

The company has contracts to deliver substantial quantities of uranium oxide to the United Kingdom Atomic Energy Authority until 1971. Only last year Rio Algom negotiated long-term contracts with the UKAEA and Ontario Hydro. The company's nuclear products division is manufacturing thorium and yttrium concentrates from uranium waste.

Hydro has agreed to buy 6,500 short tons of uranium concentrates between now and the early 1980s from both Rio Algom and the government-owned Eldorado Mining and Refining, which were the successful tenderers. Rio Algom will supply the bulk of the purchase, which is for the nuclear power station at Douglas Point, on Lake Huron, and the giant development under construction at Pickering, near Toronto.

Uranium mines are themselves big users of electric energy and the industry around Elliot Lake has a present load of about 25,000 kilowatts. In the late fifties this load was as high as 90,000 kilowatts.

The prospects for nuclear power become increasingly attractive as technology improves and there's little wonder that electrical utilities the world over are clamoring for reactors. A single pound of natural uranium produces about the same amount of energy as 11 tons of coal. Existing plants utilize only a few per cent of the energy present in nuclear fuel, but a future generation of breeder reactors offers the ultimate possibility of converting more than half this energy into power.

The story of Elliot Lake is the story of the Canadian uranium industry. True, uranium was discovered on the east shore of Lake Superior in 1847 while the first commercial ore body was worked at Great Bear Lake, a thousand miles north of Edmonton. But the magic word earlier this century was radium. Uranium salts were merely a by-product for the ceramics industry and only

Tranquil surface scenes belie the activity hundreds of feet below. Shown are Rio Algom's Nordic Mine and pipelines carrying ore slurry from grinding plant to mill at the Denison Mine.

with the outbreak of the Second World War did the metal attain strategic importance.

An initial strike was made 100 miles west of Blind River in 1948, although low assays forestalled development. Among the geologists who examined the discovery, however, was one Franc Joubin. After much study of the general Blind River area, Joubin concluded that radioactive material may have been leached from the surface. He decided diamond drilling was warranted. The results sparked off a major rush as men and geiger-counters moved into the wilderness to stake claims.

What the prospectors uncovered was a huge formation of ore-bearing conglomerate in the shape of a letter Z. Local hearsay has it that the deposits follow the bed of an ancient river. If so, mining folk would dearly like to know its source.

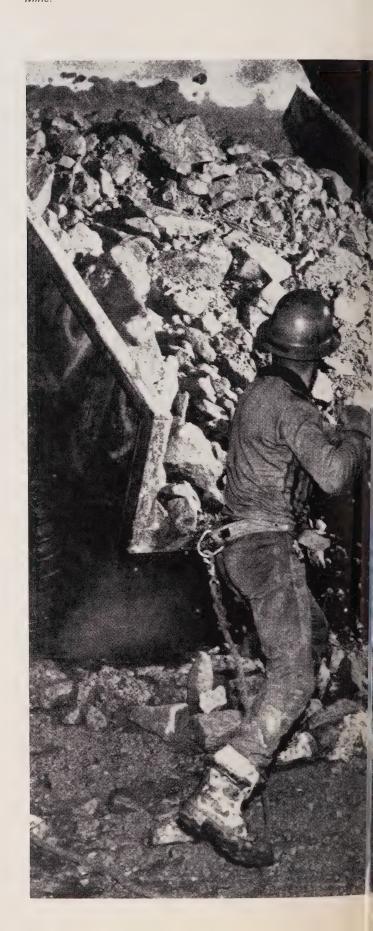
As the rush assumed boom proportions, the ownsite of Elliot Lake sprang into being. This was no collection of tarpaper shacks thrown hurriedly together like so many mining communities in the past. On the contrary, this town with its spic-and-span homes, its streets, lights, sewers, shopping plazas, hospital and police and fire services, was planned from the start. Not a tree was felled unless absolutely necessary and even now there's a strict taboo on lakeside cottages in the area.

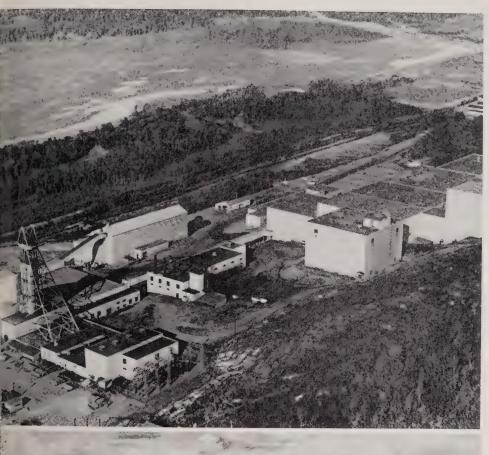
Yet the spirit of Elliot Lake, for all its brightly painted houses and well-stocked stores, was reminiscent of any traditional boom town. "Every night was Saturday night," recalls Geoff Isaac, who worked, fished and did a bit of amateur prospecting in the district long before the miners moved in.

Equally as spectacular was the slump that followed the boom. In 1959 the United States cancelled its options. Within the next two years seven of the 11 mines in the area closed and an eighth held on only to mid-1964. The population of Elliot Lake plummeted from a bustling 26,000 down to 6,000. Boards went up along row after row of near-new homes. The town that roared faded to a whisper.

To avoid a complete collapse of the industry, the Canadian government negotiated with the United States and Britain — the two main customers - to stretch out deliveries of existing orders and undertook to stockpile uranium. The major producers struggled on until 1965, when the outlook for the industry began to brighten.

Denison signed a major contract to supply France's. atomic energy commission, but the contract was not approved because of disagreement between the French and Canadian governments on inspection provisions to ensure the uranium would be used for non-military purposes. France is now setting up a joint company with its former colony, Niger, to mine uranium in the West African state.







Coincident with the Canadian government reaffirming its insistence on control of overseas sales, the Prime Minister announced a new stockpile program from July 1965 to June 1970.

Now Elliot Lake is fully responding to the spirit of the times. New faces appear daily. More miners are buying rather than renting their homes. Only about 200 houses remain empty; apartments are being filled. A \$1,300,000 extension is planned for the local high school. Elliot Lake is on the rebound.

Yet for all the optimism, there are still a number of unknowns that can affect the industry. Economic setbacks, declining birthrates, changing immigration patterns — all influence long-range energy forecasts. Development of remote hydro-electric sites in Quebec, for example, could well reduce Canada's nuclear requirements.

Many feel that the current price of uranium is not sufficient to persuade companies to turn from other, more lucrative, forms of mining. John Kostuik, vice-president and general manager of Denison Mines, said recently that a short-term outlook and lingering price resistance by consumers may delay expansion of production facilities and injure exploration efforts.

"In effect this outlook, if generally adopted, could give uranium such a scarcity value in the early seventies that the market would be characterized by erratic prices, disorderly supply and a slowing of the growth of nuclear power," he said.

A realistic open market price for uranium has not yet been established. Prices of the original military contracts ranged from \$8 to \$12 a pound while recent stockpile agreements were made at about \$5 a pound.

Fast breeder reactors, producing more fissionable material than they consume, may eventually have an important bearing on uranium demand although their arrival is probably 10 to 15 years away.

It is thought their establishment will be necessary because of likely shortages of low-cost uranium reserves. However, there will be a need for many years for power plants that consume uranium. Successful control of nuclear fusion — the process of forming new elements from lighter nuclei — is undoubtedly a long way off because of the extremely high temperatures required to start the reaction. Fusion is unlikely to affect uranium demand for many years.

Another possible limiting factor is the ability of engineering and manufacturing resources to cope with the fantastic demand for new nuclear-electric plant.

The future, then, is not without its difficulties, even though the long-term prospects for uranium look extremely bright. Basing their arguments on current predictions, the optimists are certainly in the majority. Whether or not their optimism is justified, only time will tell.









it's the only one of its kind in canada

by Hal O'Neil

Courage and brawn are still essential qualities for anyone wanting to earn a living by putting out fires. But a good knowledge of hydraulics, a smattering of mathematics and a nodding acquaintance with the principles of psychology are also essential for the modern fireman if he wants to reach the top of the ladder.

Oddly enough, fires aren't what they used to be - they're often a lot more complicated. There was no practical use for gasoline and other volatile petroleum derivatives until the turn of the century; radiation hazards were virtually unknown before the end of the last war and, for the most part, people didn't have electricity to misuse until the

To deal with these changing conditions, the upand-coming fire department officer may spend as much time in the classroom as he does drying hose, maintaining equipment and servicing the fire engine. Physics and chemistry will be on his curriculum. So will English, administration and even public speaking.

This province's modern firefighting technician will probably learn the finer points of his profession on the 92-acre campus of the Ontario Fire College on Lake Muskoka at Gravenhurst. It's the only one in Canada and one of the very few anywhere.

Since it opened in 1958 as a division of the Office of the Fire Marshal, some 4,000 experienced fire department officers have attended the wide range of courses offered. Of these, college director D. E. Barrett pridefully points out that less than two per cent (or about 80 men) have failed to pass the written and practical tests which are required fare in all courses. And no course is a piece of cake.

To graduate with a fire protection technology diploma, a student must complete some 880 hours of study plus 26 weeks of practical experience. The academic end is broken down into three main categories - fire prevention, fire fighting operations and fire department administration. Ideally, a student takes three years to complete them all, but some spread it out over six or 11 years. Stints at the college are alternated with regular work periods back at a student's own fire department.

The list of subjects covered reads like a university's engineering calendar and is aimed at preventing fires and eliminating fire hazards as well as the mechanics of fighting a blaze.

An excerpt from the description of a two-week session in the advanced training program illustrates the point

'Studies are directed toward the reduction of fire

Practical instruction at the Fire College covers almost every type of situation an officer may face. At various times students get to fight oil fires with both a fog-nozzled hose and foam, make a dummy rescue using compressed air packs, handle a stretcher case with ropes and answer a call at the fire test building.



cards in commercial and industrial occupancies. The fire hazards and safety features of oil, natural and liquified petroleum gas-fired appliances examined. Fire prevention methods in welding diguiting are studied as are those concerning trage and warehousing. The physical and chemilar properties of flammable liquids, dusts, solids, see, corrosive liquids, oxidizing and poisonous terials are analyzed. . . . "

While most of the instructors are from the college ff or the Office of the Fire Marshal, certain ecialists are brought in from other government partments and commissions as well as from versities and industry. As a recent example, may Kellam of Ontario Hydro's Research Determent presented a paper entitled "Fire Hazards Polymers".

another part of the outside lecture program inves men from the Electrical Inspection section Ontario Hydro who make a series of presentans during the eight-month academic year. The ur-long lectures give students a basic knowledge electrical installations and familiarize them with nductors, insulation and fire hazards. Back on job, the students are able to use this informato teach others how to detect unsafe electrical tallations as part of their program of inspection oughout the province. Last year, 324,625 pections, which are authorized under The Fire rshals Act, were made by 168 municipal fire partments. These visits turned up 40,905 elecal defects. Of these, 11,816 were major faults required corrective work by an electrician. The were of a minor nature such as frayed cords, r-fusing or temporary wiring.

or practical instruction, the college is one of best-equipped on the continent. A large fire hing ground includes a multi-storied training er, a fire test building, a sprinkler building and aze room for checking orientation while wear-breathing apparatus. Various types of fire rants also dot the area.

he college's fire apparatus would put many a e municipal fire department to shame and inles an aerial ladder truck, a pumper truck, smaller cles and a host of portable pumps. A harbor fighting craft is also employed on the campus arfront and foam generators augment the lineor special instruction.

simulate actual fire conditions, gasoline and sene-soaked straw bales are put to the torch e lower level of the training tower. The tower ed to illustrate and practise rescue methods as as ground ladder and aerial ladder operations. the fire test building, wood is substituted for straw and has raised inside temperatures to than 1,200 degrees, enough to buckle the doors. With thermocouples embedded at diffit levels of the test building, the students are to assess heat convection and chimney effect ell as firefighting techniques.

the nearby sprinkler building, the firemen can the many types of sprinkler heads that are slled in modern structures. Fires are set below eads to check the systems' effectiveness.

de from the fog and regular nozzled hoses,

w torch caused this \$100,000 threefire in downtown Toronto. Fighting laze in the long, narrow sporting goods proved difficult and prompted the fire thent to bring many types of apparatus olay including the "cherry picker" hand extinguishers are used by students to put out gasoline and oil fires set in huge pans on the fire ground. The hand extinguishers include those carrying dry chemicals under pressure. For many years this type has been based on sodium bicarbonate, but is now being augmented by Purple K, a more effective extinguisher with a potassium bicarbonate base.

Classroom work is carried out in the Scott Memorial Hall, named after W. J. Scott, the former Ontario Fire Marshal. Mr. Scott was the moving force behind the College's establishment. He promoted it for 10 years until it was legally established under The Fire Department Act in 1949. Another nine years elapsed before it had a permanent home.

Students are housed in the largest building, which has individual rooms for 40 men. Demonstration rooms feature hydraulic equipment, call systems for volunteer fire departments and working models of fire alarm boxes and individual building alarms. One of the newest of these is set off by smoke — giving an earlier warning than those activated by heat.

A \$475,000 fire technology building is presently rising on the grounds and will be the first expansion since the college opened.

The first floor will have accommodation for five training vehicles and portable pumps as well as administrative offices, storage areas and a fire mobilization centre. The centre will provide a vitally important province-wide communications control to co-ordinate all municipal fire departments in case of a national emergency. It will be a completely self-contained unit with fallout protection. The second level will have a large amphitheatre classroom, seminar rooms, a laboratory and offices.

The college has no tuition fees and it also pays for travelling and accommodation expenses for Ontario municipal fire department personnel.

A limited number of other students are accepted at their own expense. They come from provincial government departments, the federal government, insurance companies, and from foreign territories including the United States, India, Pakistan, Guyana, and the West Indies. Men from Hydro's Accident and Safety section are included in this group. Not only do they find the instruction helpful but they also learn how fire departments operate.

Just how well does Ontario fare in the fire statistics department? Fire Marshall Martin Hurst regards the picture as "promising".

In spite of a rise in population (from 6,047,000 in 1962 to 6,634,000 in 1966) the number of fires in 1966 was below the five-year average for the third successive year.

Last year there was a total of 23,199 fires compared to the five-year average of 24,112. At \$44,786,691, last year's total fire loss was also below the average. The number of fatalities and injuries, however, continued to climb. There were 229 killed and 837 injured as a result of fires in 1966.

"The overall picture must reflect a measure of success for the intensive efforts in the field of fire prevention", says Mr. Hurst, pointing out that prevention is one of the major concerns of his organization.

Whatever the statistics may prove, they do point out the need for a never-ending vigilance against fire. It's to be hoped there are just as many kids today announcing, "I'm going to be a fireman when I grow up", as there have always been in years past.

wires, watts and water



Hydro's researchers use an unmanned hose to direct water at an energized metal plate while investigating techniques of quelling fire in and around electrical equipment.

Directing streams of water on a fire in and around live electrical apparatus and circuits may sound foolhardy, but firemen are doing it safely — thanks to tests carried out by Ontario Hydro's Research Division with the co-operation of the Office of the Fire Marshal.

They stress that it's a job for highly skilled firefighters with special training.

The research group, headed by G. W. N. Fitzgerald, played fire-hose streams on a metal target energized at voltages ranging from those used in domestic and industrial services right up to 230,000 volts. Nozzles of various types and sizes were used in the tests with water pressures from 30 to 100 pounds per square inch. In addition, water samples from different parts of Ontario were analyzed to determine the range of conductivity which exists.

The test results indicate that spray or fogstreams may be used in safety up to a minimum of 15 feet from the electrical equipment. Solid streams from nozzle tips up to % inch can be used provided a reasonable distance is maintained from the electrical circuit. Solid streams from tips greater than % inch may be hazardous if used on live circuits or apparatus.

Tables were worked out to show distances and other factors involved in fighting fires around live circuits in safety. Generally, spray or fog present the highest resistance to current flowing from the circuits to the fire fighters but greater distances with solid streams minimizes the danger.

These tests have been demonstrated at the Ontario Fire College for a number of years. In addition they are staged at about 12 locations around the province each year to acquaint fire department personnel with the technique.

neasure measure

by Bob Morrow

sooner or later we'll have to abandon our gills and pecks and even our scruples

Once Gladys Swarthout astonished a French doctor by reporting that her son's temperature was 104 degrees. "Impossible," exclaimed the doctor, who thought she meant the boy's blood was boiling hot.

The doctor, of course, was thinking Centigrade (in which the boiling point of water, at any rate, is 100 degrees) while the famous singer was using the Fahrenheit scale.

The incident illustrates the initial communications problem if Canada were to go metric and, like Britain, adopt Centigrade for recording everything from fevers to the weather. A sweltering 90-degree forecast in the Toronto Globe and Mail, for example, is a real cool-sounding 32 degrees in the London Times.

In a metric Canada, highway traffic signs would give you carte blanche to do 100 (kilometres per hour), tea and sugar would come by the kilogram, and you would ask your lumber dealer for a 50 by 100 (millimetres) instead of a 2 by 4 (inches).

Britain decided to adopt the metric system of weights and measures two years ago over a 10-year period. "We are going metric for the good, hard, economic reason that unless we do our trade will be adversely affected," British Minister of Technology Anthony Wedgewood Benn explained recently.

Obviously the metric system makes good sense to Britain. An estimated 91 per cent of the world's population uses it and 76 per cent of

world production comes from metric countries. They include Europe, Communist China, Japan and India. With Britain joining their ranks, Canada and the U.S. are becoming an increasingly isolated inch-pound "island".

The metric system, based on decimal weights and measures, is more convenient and simple than the inch-pound system. It uses multiples and sub-multiples of 10 for standard international units such as the metre, gram, litre, second and

In contrast, English-speaking people contend with a weird conglomeration of inches, yards, rods, furlongs, links, chains, gills, pecks, bushels, stones, fathoms, pennyweights, scruples, drams, cords, arpents and tons that may be long or short.

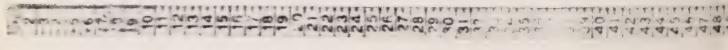
Britain's decision to metrify, a brave one considering that the whole nation is involved in its complexities, has stimulated wide interest in Canada and the U.S. Both Ottawa and Washington are going through the motions of studying the impact of the metric system on their respective economies amid choruses of approval and disapproval from various sources.

Ontario Hydro, too, has looked into the question. Jim Vanderleck of the Electrical Research Department carried out a study in 1965 of the implications for Hydro.

"It's not the metric system as such that's the rub," says Mr. Vanderleck, "but the all-embracing changes in standard sizes involved. This is the heart of the problem."

Bert Price, senior specifications engineer in Supply Division, points out that Hydro will use about 2,000,000 tower bolts this year. If Canada went metric, Hydro would use bolts with different sizes and threads for new towers but replacement bolts would have to be stocked for







a conscientious metric guide

= 2.54 centimetres

= 1 metre

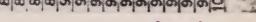
= 1.6 kilometres

= 80 kilometres per hour 20 miles per gallon = 7 kilometres per litre

= 1 litre = 8 litres = 1 kilogram = metric ton = 2 hectares

100 degrees Fahrenheit = 37.8 degrees Centigrade





1 metre

years. Meanwhile, manufacturers would face the expense of producing both types of bolt.

As Mr. Price suggests, adoption of the metric system doesn't merely imply superimposing new weights and measures on present ones. Besides bolts, sizes would change for every conceivable item - milk bottles, cans, barrels, machine parts, lumber, paper, filing cabinets and power cables. If the change were sudden, you couldn't find a bolt to fit your lawn mower.

M. Vanderleck says Hydro and other utilities would have to maintain double inventories for a number of years until old equipment and parts became obsolete.

Although such metric units as kilowatt and megawatt are every-day utility terms, Hydro relies mainly on inches and pounds. But the metric system already has a number of applications and commands wide support, particularly among engineers and scientists who believe the system would save much time and money in making calculations.

Dan Featherby, chief thermal operations chemist, does all his analytical work in metric, using a home-made graph to save time on conversions. "It's caused me to burn a lot of midnight oil," he said. "The sooner we get on with conversion the better."

Nuclear operations uses metric dimensions for nuclear reactors, weighs heavy water in kilograms and uranium in metric tons (2,204 pounds). "We've been pressing to get more metric units adopted," says Lorne McConnell, nuclear operations engineer.

Bob Jackson, home heating sales officer, points out that heat loss calculations for electric heating installations are done both in convenient watts and awkward British Thermal Units (BTUs), depending on the use. One reason is that BTUs are widely used in the heating and air conditioning industry.

Charles Stauffer, chief surveyor, says his men. use a decimal system involving feet and hundredths of feet for distances, but degrees,

minutes and seconds for angular measurements. For certain jobs Hydro surveyors use such electronic instruments as the geodimeter and tellurometer which measure distance in meters; then they convert back into feet.

Surveyors feel that with the standard footdecimal system there isn't a need to switch to metric, he said. "But eventually Ottawa will go metric and in my opinion the surveying profession will have to go along."

Whether a Hydro engineer or scientist uses metric is a matter of individual choice, says Mr. Vanderleck. "But if they work in metric they have to give their result in the inch-pound system."

Elsewhere there's already a very definite swing toward the metric system in certain fields, such as the Canadian pharmaceutical industry. Common drugs like phenobarbitol are now being labelled in milligrams with apothecary grains printed in brackets, and hospital staffs are struggling to become familiar with the strange

The main argument against the metric system is the cost of conversion although no reliable figures exist. One estimate places the U.S. cost between \$26 billion and \$100 billion over 20 to 30 years or as high as \$500 per capita. A Toronto industrialist says conversion might cost Canada between \$500 million and \$1 billion or \$50 per person. Total cost of converting Ontario from 25 to 60-cycle power works out to about \$65 per person although costs were actually borne, for the most part, by the areas concerned.

But no one has estimated the possible savings or trade advantages which would accrue by adopting the metric system in North America.

A panel discussion held several years ago by the Engineering Institute of Canada sheds some light on the economic issue. "One of two decisions has to be made: Whether we can afford to make the change, or whether we can afford not to make it," said Dr. G. L. d'Ombrain, of McGill University's electrical engineering department.

An electrical manufacturing executive said his firm gave up a half-completed study of conversion costs because "the company would go broke."

Advocates of the metric system say the U.S. and Canada are becoming increasingly isolated in a largely metric world and that conversion costs can only mount as their economies grow. They urg both countries to start converting now if they w to promote trade with developing nations who will likely become less enthusiastic about impo which do not conform to their standard sizes.

The Canadian Government has been urged to undertake an in-depth study of the ramification the metric system for Canada by such groups a the Canadian Standards Association and the Canadian Council of Professional Engineers, representing engineering associations from 10 provinces and the Yukon. "No agency or organization, apart from the Government of Canada, possesses the resources necessary to explore this problem in a proper fashion," says the Engineering Journal.

However, Canada could hardly go it alone because of its close inter-relationship with the U.S. economy. Strong opposition to metric standard sizes has been voiced in the U.S., particularly by the auto and machine tool indu tries. But there's strong support from other groups, such as the American Society for Testing and Materials which now shows metri equivalents for all ASTM standard dimensions

"Economic forces will likely prevent Canada fr adopting the metric system until the United St does," says Mr. Vanderleck. "Canada, howeve could encourage the use of the metric system many ways, which means that we might beco "bilingual" in measuring systems until the U.S changes, if ever."

One benefit of the metric system should delig students. It's been estimated that its adoption would save a year's schooling in elementary mathematics, and what's more, help higher le of education by reducing the complexity of technology. For anyone who's had trouble juggling fractions, metric maths would be a cinch.

only the sign has changed in this iew of an Ontario freeway where imbering trucks and family jalopies re invited to do 100 - kilometres er hour, that is. It's roughly equivalent 60 m.p.h. but warning suggests ental adjustment necessary if we go



nuts & bolts

Caught up in the nation's change to the metric system, Britain's Central Electricity Generating Board expects it will take 20 years to work all of the pounds and inches out of its own operations. At the same time, much will have been accomplished by 1975 - the target date set by the government for the whole nation.

The board has set up a Metric Steering Committee to work with manufacturers in drawing up a timetable for the gradual introduction of metric units. A recent article in the CEGB publication Power News suggests some of the problems:

"Draughtsmen may prepare drawings giving dimensions in metric and imperial measurements; maintenance staff will need to work with equipment and tools for both systems; operating staff will use instruments calibrated in either scale; office staff will have to get used to new International "A" and "B" paper sizes; and typists will have to get accusomed to the new symbols brought about by engineers using the S.I. (System International) Units

"More specifically", the report goes on, "the traditional feet and inches in drawings will be superseded by metres and millimetres; the present pound per square inch will eventually be newton. per square metre on new gauges, metric bolts will have a different diameter and hexagon . . . "

Designers of new stations will work mainly in metric units but for existing stations where metric and British dimensioned components may be side by side, staff will need to cope with an extra range of tools for metric nuts and bolts. Taps, dies and wrenches may also be duplicated for a long period of time.

To assist in the changeover, the CEGB is preparing manuals for engineers, designers and other employees.



silent efficiency isn't enough

The group of masked men gathered intently around the tables in a downtown Toronto hotel meeting room early this summer were all lawabiding citizens in good standing with the local constabulary and without designs on the national treasury or any other potential source of illicit profit.

They were, in fact, elected Hydro commissioners, managers and senior staff members from municipal electrical utilities large and small across the province, and the occasion was a workshop session on public relations. The masks only served to dramatize the problem they are determined to solve — the "facelessness" of the utilities in the eyes of the public.

Call it gimmickry, if you will, but its use by a hard-nosed group of business and professional men scarcely given to high-jinks effectively underlined the start of an all-out drive to mend neglected public relations fences.

Origin of the Ontario utilities' concern for their public image goes back more than three years to the report of a select committee of the Legislature recommending that local Hydro commissions be abolished and their duties taken over by committees of council. Similar recommendations were contained in subsequent government-sponsored regional studies and additional jolts were administered by two or three local councils asking to take over Hydro affairs.

Prompt action by the Ontario Municipal Electric Association was probably instrumental in winning government assurance that it was proposing no legislation implementing these recommendations. The association, representing commissioners from nearly all of the 350-odd municipal Hydro utilities in the province, submitted briefs and made presentations at various hearings. A brief by Ontario Hydro supported their stand.

Dangerous complacency might have followed but the Hydro commissioners were beginning to suspect that the whole furore was the result of a deeper problem. They wanted to know why, with its excellent record of service, dependability and low rates, the local Hydro system had been queried in the first place. Reasoning behind the regional study recommendations had nowhere been spelled out.

Among the first to give expression to the Hydro commissioners' malady was D. P. Cliff, 1st vice-chairman of Ontario Hydro and former long-term secretary of the OMEA. Speaking at various association functions, he said:

"The abolitionist movement, if I may call it that, is only a manifestation of a more fundamental problem. We have failed to maintain the exceptionally high degree of public understanding and support which Hydro enjoyed in its early days. We have allowed ourselves to be taken for granted."

Striking a similar note, W. F. Rannie, Beamsville, president of District 5 of the OMEA, put it this way. "Whether we like it or not, our Hydro commissions are more or less a 'faceless image' in the eyes of the public, who are our masters as well as our customers. They remember us well when the light goes out or the TV fades, and when the power bill arrives, but is that the sort of memory to cultivate?"

Dr. J. D. Fleming, Dundas, president of the parent OMEA, calls for a rekindling of public

interest in Hydro through an appreciation of basic concepts of public power in Ontario. maintains that the principles underlying the lot Hydro systems are as sound today as they wer the turn of the century when municipal lead petitioned the Government for power at delivered to their borders. As he sees it, it's a converted where the quiet efficiency of Hydro operation over the years has led to a general waning public interest.

A smattering of editorial comment sugg that the commissioners have diagnosed t problem accurately. Writing in the *London Press*, columnist Joe McClelland lauds u efficiency and decries the state of their relat with the public.

"The people of Ontario have reaped immea able benefits because they own the power distr tion system," he says. "The PUC and On Hydro have been efficient servants. They proof of the fallacy of the argument that pri enterprise can always do it more efficiently."

On the debit side, he warns that the princip public ownership could be rendered ineffecti the people running the operation, no matter dedicated and efficient, disrespect the put right to know and to speak.

Exhorting Hydro to "keep selling itself," Petrolia Advertiser-Topic had this to say:

"Forty years ago when public power suppower organizing torchlight parades and bicy from town to town to speak against the propower interests, Hydro was brim-full of the pic spirit. But now it is an old and well establifirm and there is an air of bureaucracy was through its corridors."

This writer saw public indifference as or



co-chairmen of the omea/ameu co-ordinating committee on p.r.

H. B. McCubbin

"Every local utility in Ontario has practised a little public relations in the past, some without even realizing it. This hit-and-miss approach has not been enough, though, as events of the past two years have shown. Misunderstanding, controversy and even threat of abolishment have been the experience of utility commissioners in many parts of the province.

"We, as utilities, must start to communicate more frequently and more effectively. We must start within our own circles by awakening utility commissioners to the need for improved public relations right in their own community. Veteran commissioners particularly must appreciate that the public attitude towards Hydro in Ontario is a continuing responsibility. Long and intimate asso-





H. B. McCubbin

J. F. Anderson

ciation with the inner core of Hydro may have isolated them from the outer or objective view which is the public's perspective."

J. F. Anderson

"In the past there has been a tendency to hide our light under a bushel when it came to telling people about the excellent service they receive from their utility. We are aware of our 'instant service' philosophy — but does the customer know?

"In 1967 terminology, your OMEA-AMEU public relations co-ordinating committee is 'structuring' a PR program based on 'dialogue' between all segments of our industry with the specific intent of 'turning you on' when it comes to public relations."

dro's continuing problems. "When the agency ts service is threatened," he went on, "no one is much attention. Hydro, it is expected, will adle the problem quietly and competently, as as always done."

strong and capable ally in the OMEA's bid to amp the lines of communication between the ities and the public is the Association of nicipal Electrical Utilities of Ontario. Composed managers and senior staff, it represents the ective ability and experience of 285 member ties. Originally geared to function in terms of trical distribution systems and balanced buds, the AMEU has more recently demonstrated resatility by the part it has played in marketing load building.

ntario Hydro is helping to set the PR house in ir by providing professional guidance in carryout whatever programs the utilities decide are cisable.

considerable progress has already been achieved. Addition to establishing the dimensions of the polem, the utilities have set up a task force to tride the remedy.

pint public relations committees of the OMEA AMEU have been established on a district its throughout the province. They will work hugh a central co-ordinating committee committee of representatives from both associations. The province of the province of

O-chairmen of the central PR committee are B. McCubbin, chairman of North Bay Hydro, D. J. F. Anderson, manager of the Leamington Uic Utilities Commission.

he public relations co-ordinating committee help by recommending guidelines and provid-

ing programs," Mr. McCubbin explains. "The district public relations committees must work diligently to obtain the support and co-operation of their neighbouring utilities. Each local utility should undertake public and community relations projects that will gain public support and understanding of a concept we all believe in—the Hydro family in Ontario."

A professional engineer, Mr. Anderson concedes that "PR is not a slide rule technology. Experience has shown us," he says, "That methods which are effective today may not be effective tomorrow. Since there are no specifics in this field it is our hope that the PR co-ordinating committee, through its analysis of current trends, will find ways and means of effectively reaching our customers with our story."

Some of the ground rules were laid down at the day-long workshop session held in Toronto at which both district and co-ordinating committee members formed discussion groups to tackle fundamentals.

For one thing, the housewife is going to receive a good deal of attention. Surprisingly, perhaps, housewives emerged as the community group considered to have the most influence on the electrical utility. Reasons given for the choice included their say with the family budget, their extensive use of appliances, the personal effect of a power interruption on their day-to-day lives, and attitudes they pass on to the children.

As a first step in this area, a two-part "statement of services" is being considered which the local utilities would distribute to their customers. It would list information helpful to the customer in making better use of the services provided by the utility. Part two would solicit the customer's

opinion on the services available and enable her to make suggestions. Replies would serve as a useful guide to the co-ordinating committee on PR as well as the utility concerned.

Press relations were voted most important in assisting utilities to tell their story and it is planned to prepare a guide dealing with this subject. A format is also being developed for utilities wishing to inform councils and customers on progress through the medium of an annual report.

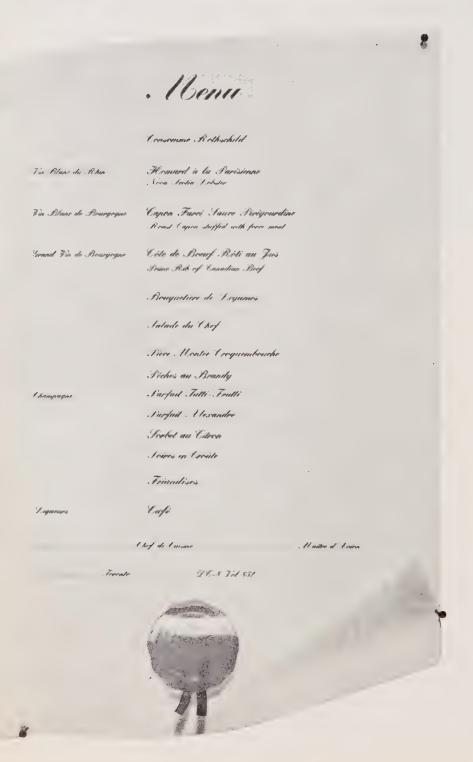
In listing their most common problems in the realm of customer contacts, the utilities included the building and maintenance of lines across private property, location of transformer stations, rate increases and poor employee attitudes occasioned by lack of training and understanding of utility objectives.

Discussion also centred on the all-important question of moving a utility from acquiescence with the need for a PR program and general agreement on its format to active participation and the establishment of a PR budget. Formation of a special group is being considered to establish direct contact with each utility but the regional PR committees will be asked to accept most of the responsibility in this vital area.

"Tell the People" is the slogan selected to represent the utilities' new emphasis on public relations as Mr. Rannie, points out, it puts the accent in the right place. He says:

"This is the purpose of the OMEA-AMEU co-ordinating committee, of the district public relations committees and of you as commissioners on the only level that is absolutely vital . . . the day-to-day relationship with your masters — the public you serve."

instant à la carte





tomorrow's housewif will shop by menu

The era of the instant meal is almost here . . . o the signals being flown by the world of technol and the near-science of food preparation we have us believe.

Soon, say the experts, the housewife won't meals ready in the traditional sense. She w even go to the supermarket. With menu rather t shopping list in hand, she will use closed-cir TV to tune into the supermarket and select p cooked or prepared dishes for delivery. In fact, shopping is already in use at one American ap ment complex.

Technology will enable the housewife to pla mix-and-match game of appetizers, entrées desserts fit for kings. Stowed away in her free storage unit, these dishes will be ready for use time. To prepare a meal, she will simply flip a switches. The dishes will move from storage oven automatically and be table-ready insta

Just how tasty will the instant meals be?

Some idea can be garnered from in-flight f served by major airlines like Air Canada. While truly in the realm of the housewife's Utopia (s meals are never frozen), the Air Canada foo prepared in kitchens at the terminals and rehe on the aircraft for serving.

Any veteran air traveller will tell you that m have come a long way since the box lunch used to be the bill-of-fare on an eight-hour f between Toronto and Winnipeg.

On today's Flight 851, a non-stop Toro Vancouver hop that goes twice the distance about half the time, food is a gastronomic ad ture. Making up the first-class menu are delights as Homard à la Parisienne, Capon Sauce Périgourdine, Côte de Boeuf Rôti au and Pièce Montée Croquembouche.

Illustrating the growth of these near-in meals is the announcement by Canadian Nat Railways that there will be no dining car or Turbo train which will start plying the Torc Montreal run later this year. CN will serve cooked meals on fold-down tables right at sengers' seats. And the railway says the se may be extended to its other passenger operat

It really isn't much of a jump from the pre-cc food served travellers to the instant meal. 1950, when frozen foods caught on, the processing industry has been improving ex lines and introducing new ones. In those years there were only frozen fish sticks, strawberries and then orange juice. Today, fr

Air Canada passengers receive a souvenir menu of the almost-instant gourmet dinner served aboard Toronto-Vancouver Flight 851. As an added touch the chef and flight steward sign and date each copy.

At Canada Freeze-Dry Foods in Oakville, garden-fresh asparagus, which will eventually find its way into soup in Britain, is washed, chopped and then freeze-dried. Each 35-pound bag represents 600 pounds of fresh asparagus.

kaging has been extended to almost every hard and garden vield.

and we also have the TV dinner, which when oduced a decade ago was a big step toward the ant meal. If you haven't tried one since they came on the market, you're in for a surprise. ups and desserts have been integrated into the minum tray and the whole meal has been uced up.

low the big rumble on the food scene is the ent of a revolutionary freezing process heraldthe instant era. Products that provide a clue to at's ahead are freeze-dried coffee and freezeed chives. They're the forerunners of a world of t-weight, easily transportable, easily stored ze-dried foods that require no refrigeration.

o far, the high cost of production has limited oduction at the consumer level to coffee, ves and camp rations. However, many dried ps, sauces and salad dressings now contain ze-dried pieces of mushroom, meat, chicken peppers. And large institutions - hotels, hosis and schools — are leading the way in ving out the freeze-dried idea. They are using ds like chicken à la king, meat loaf and cooked raw shrimp which have been subjected to the ydration treatment.

ssentially, freeze-drying involves blanching and letimes cooking the food, then chopping it into Il pieces which are quick-frozen. While still en, the food is gently heated in an extremely 1-vacuum drier, leaving only the solid framek. Moisture evaporates, reducing the food's 3ht by anything from 40 to 95 per cent. As an nple, 600 pounds of fresh asparagus, after ze-drying, tips the scale at only 35 pounds.

me foods lose their flavor and texture during process, but this is being overcome by a modifion called freeze concentration. By this method, of the moisture is frozen out of the food as ice tals and the remainder of the product freezein a shorter time.

bring the foods back to life, they have only to mmersed in water. Unlike dehydrates of the the foods—especially items like strawes — look and taste as they do in their original

insumers can soon expect to see cereals with peaches, blueberries and strawberries right e box. As soon as the milk is poured on, the springs to life. Such cereals have already been et-tested in the United States and found lar despite their higher price. Also likely to ar soon are freeze-dried products like shrimp e, shrimp and crabmeat cutlets and chicken t zini. Even the humble sandwich will be in-



Dr. Walter Smithies, president, Canada Freeze-Dry Foods, bites into a piece of ice cream, one of the edibles his firm has freeze-dried. The gamut of foods either freeze-dried or containing freeze-dried ingredients runs from corn flakes to coffee and from peppers to parsley.

vaded by freeze-dried fillings. Salad mixes like ham, tuna, egg, chicken and shrimp have been developed that, with the addition of water, make up into a spread in a matter of seconds.

In Canada, there are only two freeze-dried plants operating as yet. At Waterloo, Quebec, the Slack Brothers process mushrooms for use in soup mixes while Canada Freeze-Dry Foods Limited at Oakville, Ontario, processes meat, vegetables and fruit for canners who in turn supply large insti-

The \$500,000 Oakville plant also supplies food for the armed forces and sporting goods stores. These foods are canned and keep for two years. This feature, along with their relative lightness, makes them ideal for emergency supplies or for work crews in remote areas. Ontario Hydro is a customer of Canada Freeze-Dry Foods, buying cans of beefsteak, pork patties, diced chicken and turkey for its survival kits.

Pundits can foresee freeze-dried foods being used with more conventional frozen dishes to produce the instant meal. The electric freezerstorage unit would add the correct amount of water to dehydrated items when the housewife selects her menu. It's even possible that the tableready meal would emerge from the oven on a disposable trav.

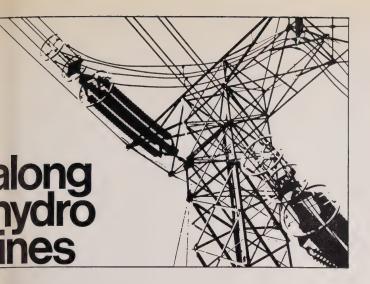
Electric micro-wave ovens may well become common in the home. This electronic whiz cooks roasts and turkeys in two to five minutes so that a re-heating chore will take only seconds. Microwave ovens are already in commercial use. The flight kitchens at Toronto International Airport use two for rush orders - the ovens cook food by subjecting it to very short electromagnetic waves.

Happily, there'll still be room for the culinary artist who likes to whip up a meal of his or her own creation. But like basket weaving or leather work it will be strictly a hobby in years to come.

Going just one step further in the world of electronics, it's likely that the housewife won't even have to come home to prepare a meal. Bell Telephone's new electronic exchanges, in league with pushbutton telephones, allow signalling between telephones. Thus the lady would call home, tap out a few instructions for the kitchen equipment and the family would arrive to a hot meal minus the hostess.

From early in its infancy, electric power has played a major role in reducing kitchen drudgery. Now the instant meal is nearing reality. But far from reducing electrical consumption, the involved methods of freeze-dried processing will likely place an even greater load on the nation's power systems.





arking the past

o early dates in Ontario's story of public power were marked the the erection of plaques at Bracebridge and Orillia. The ques were placed by Ontario Hydro as part of Centennial ar activities.

At his home town of Bracebridge, R. J. Boyer, MPP and viceairman of Ontario Hydro, unveiled a plaque paying tribute to -sighted electors who early recognized the potential of eleccity and in 1894 purchased an 80 h.p. water-powered generatplant to supply the community. In so doing, the town presence the concept of municipal hydro-electric generation in

Together with Orillia Mayor Isabel Post, Mr. Boyer unveiled to other plaque honoring the people of Orillia. It was in 1902 at the town's mayor closed a switch that started the flow of ctricity to the town over 19 miles of transmission line from a 1900 h.p. plant at Ragged Rapids. This was the first time a unicipality had built its own hydro-electric plant complete with ng-distance' transmission lines.

ectric steel

the Steel Company of Canada. Iron is processed in a rotary into metallized pellets and fed into an electric arc furnace. Stelco says the possible advantages are high productivity, the lity to automate the process and the ability to expand or set new steel mills in smaller units. Until now, when primary ore is used, the need for blast furnaces tended to force larger units.

I on its way

dro's Electrical Modernization plan is getting off the ground big way. In its first three months, 150-odd municipal utilities e confirmed their intention of participating in the plan and my more have given verbal commitments. In all, about 77 per t of the province's residential customers are now represented. The plan is designed to stimulate public interest in electrical me modernization and to achieve higher standards of safety, beingy and convenience.

indicating the size of the potential market is the fact that an imated 1,000,000 homes in Ontario are inadequately wired. Ited to this is the potential of converting to electrical heating the other sections of the plan cover structural changes involving ting and built-in appliances.

tility response to the plan has been particularly heavy in ario Hydro's Central and Western regions. To date, over 1,600 tractors in Ontario have heard a presentation of the plan and received kits from which to work in contacting potential

customers. And there are more of these meetings scheduled around the province for the fall.

"The success of this unprecedented undertaking hinges on municipal utility participation. They are the people who reach the customers and can put the plan over," says D. A. Ramsay, Ontario Hydro's director of sales. "So far their response has been outstanding, but to make the EM plan truly effective no major urban centre can be by-passed."

One of the key back-ups to the plan is a credit scheme enabling consumers to live better electrically now and pay while they enjoy the advantages. Financial arrangements comply with the newly-introduced Consumer Protection Act.

Setting the operation in motion has not been without its complications. Said one official: "It's like setting up a finance company with 450 branches across the province."

Bridge partners

For Nepean Hydro Chairman Harry Hargreaves, the Ottawa visit of the Queen and Prince Philip brought back old memories. In a 45-minute visit with the Prince, the two men reminisced about their two years on the bridge of the HMS Wallace during World War II.

Prince Philip came aboard the ship as a sub-lieutenant and left as a first lieutenant while Mr. Hargreaves served as chief yeoman in charge of communications. During other Royal visits, Mr. Hargreaves had seen the Prince from a distance, but this time he was called to Government House for a chat.

Hydro takes to the road



They scored a symbolic bullseye.



Sudbury has lots of Centennial dash.

Port Colborne and Sudbury Hydros have marked Centennial year in a mobile way. Both utilities constructed floats for local parades.

The Port Colborne display has been making the rounds in the Niagara area, appearing at Dunnville, Stevensville, Welland and Hamburg, N.Y., as well as at home. In Welland it took first prize in the commercial class.

In the nickel belt city, the float appeared in the district parade.

contrasting 1867 and 1967. It was somewhat of a co-operative effort with Ontario Hydro's construction zone supplying the 40-foot trailer, Sudbury Area office providing the driver and Sudbury Hydro building the display.

Keeping down the dust



It's part of the good neighbor policy.

A new 2,200-gallon tank truck that sprays water like a fireboat is being used to suppress dust on the massive coal stockpile at Lakeview Generating Station, on the outskirts of Metropolitan Toronto.

The truck, equipped with a 600 gallon-a-minute pump, has a 24-foot boom for spraying down the edges of the coal pile, a high-pressure fog nozzle for spraying conical piles of loose coal and rear-mounted wands for spraying roadways. The water contains a chemical that keeps the coal moist for more effective dust control.

Last fall Hydro planted about 270 fast-growing lombardy poplars north of the coal pile to serve as a screen and windbreak.

Hydro at CNE '67

Lightning bolts danced around the stage like chorus girls. Two hundred and fifty thousand volts split a hardwood log in half. It was all part of the man-made spectacular of extra-high-voltage that played this year's CNE.

Created by men from Ontario Hydro's research division, it was the star of Hydro's display in the Century of Progress building and formed part of the CNE's Centennial year celebrations. Hydro traced electrical research and development through the years, depicted some of the earliest steam turbine generators and hydro-electric equipment then topped it off with EHV lightning.

At the Better Living Centre, the more traditional Hydro exhibit headlined a puppet show of lighthearted Centennial drama. In



Real live dolls.

the seven adjoining display areas Hydro's progress in relato Canada's first 100 years was depicted.

Using a portable surge generator, the researchers cre lightning bolts to illustrate the destructive power of elect storms — and what is being done to stamp out powerline lo due to lightning.

Among the artifacts illustrating Hydro's history was one of Goldie Corliss Twins, a heavy-duty, high-speed steam tur generator first installed in the old Grand Trunk Railway sh Stratford, in 1908. Also displayed was a hydro-electric gener which powered the Watson Manufacturing Company's knit mill in Brantford from 1904 until 1964. Various types of light on show ranged from the open arc lamps used to light str before the turn of the century to the generator that power searchlights aboard the S.S. St. Lawrence during its now fam searchlight cruises.

At the Better Living Centre, electricity from the atom was ad to the displays. Color transparencies and a model of Picke nuclear power station were used to tell the story.

Panels of cartoon characters used in the 1966 CNE show replaced this year were donated to Toronto's Hospital for Children. The hospital is using them to decorate a roof playground.

Ray guns and silver skins

Toronto Hydro was way, way out in its exhibit at CNE '67. As final leg in a look at the past, present and future world of fash it drew a terrific amount of attention including a full-page sp in the Globe and Mail.

For the trip through time, the audience first saw yesterday today in the Queen Elizabeth Building then moved to Torc Hydro's contribution next to the Ontario Hydro display in Better Living Centre. The futuristic fashions — backed up futuristic electrical appliances — were shown seven times a

Clearly, the 25 Canadian designers who contributed the v out outfits had a lot of fun in making peek-a-boo clothes, s silver outfits like second skins and adding boots and buckles even flashing ray guns straight out of Buck Rogers (all-elector course).

municipal briefs

Listowel PUC has joined the list of utilities which have reduced their history, prepared for the Hydro Hall of Memor booklet form for distribution. Among items in the attrabooklet, "Light, Listowel and the Public Utilities Commiss is the notation that in 51 years of existence there have been five managers and 21 commissioners — a high degree of cation.

One of the best-known Hydro personalities in Eastern Onl Helen Appleton, of Prescott PUC, retired recently with 46 y of service. Members of the commission and staff, along Ontario Hydro representatives, held a dinner-dance in her ho

Chairman Gerald Coligan presented Miss Appleton with a coracelet.

Two well-known Guelph Hydro men — James Gow and Eu Dunlap — died recently. In his 40th year at the utility, Mr. had served as secretary-treasurer from 1951 to 1958 whe moved to the position of billing supervisor at his request bec of poor health. A Guelph native, he was president of the Diabetic Association and a member of the Rod and Gun and the Masonic Order.

Mr. Dunlap was superintendent of engineering and sal the time of his death. A native of Toronto, he joined Or

dro after graduating from the University of Toronto in 1949, worked mostly for the Frequency Standardization Division moved to Guelph in 1957.

dsor Utilities Commission is studying the idea of adding a lic relations officer to its staff. General Manager Glen Fisher report on the matter in the near future.

ville Downs is the new manager of Orono Hydro. He succeeds Dent who held the post for 17 years. Mr. Downs, who has 22 rs of utility managership experience, moves from Streetsville C where he was manager.

ed, carries a strong Centennial flavor including a full-color of cover depicting Hydro headquarters in full Centennial dress, the report looks not only at the present but at the past and the content indications of progress are the 1,000,000 sepower demand recorded last December, net assets of 0,000,000, a similar amount in the sinking fund and an annual content of the content of

nderground construction continues on a major scale in onto and last year cost \$3,017,000 of which \$670,000 was nt on ducts, manholes and transformer vaults, \$1,030,000 on installation of cable, and \$1,317,000 on transformers.

ton Leach, assistant manager of Chatham Hydro, has been ted president of the local Rotary Club.

retired. A native of Mount Forest, Mr. Rachar entered the strical scene in 1915. During the intervening years he has had own electrical business in Guelph, worked for Beatty Bros. in gus, served as manager of Newmarket PUC and worked on projects with Research Enterprises.

uring his Newmarket years, he earned the right to be regisdas a professional engineer. He has been succeeded by neth Dunn, who has been at Elmira for some time.

I known in municipal Hydro circles for his work as load lyst, E. G. Phillips of Ontario Hydro has been appointed ect supervisor of the Mathematics and Engineering Computas Department.

hald J. Foreman of Etobicoke Hydro died recently. For the six years he had been superintendent of Mimico Hydro and ramalgamation moved to a foreman's position with Etobicoke. Foreman began his utility career with North York Hydro and red to Mimico 25 years ago.

s H. Lamb has been appointed general manager of Oakville C. Formerly chief engineer for Toronto Township Hydro, Mr. b succeeds Russell J. Barlow, who resigned.

y like to get up with the chickens in Hespeler so the Hydro mission obliged. Acceding to an employee request on a trial s, commissioners revamped the old hours of 8 a.m. to 5 p.m. new schedule of 7 a.m. to 4 p.m.

rborough Utilities Commission salesmen may soon be as to the office as their pocket radios. This means of communicais being considered in the interest of improved customer ce.

Clyne, secretary of Amherstburg PUC, has retired after 26 with the Commission. Her successor, James Scarlett, has a up the dual post of secretary-treasurer.

the theory that everybody's interested in utility progress, rew Hydro took three full columns in the local newspaper to ant their annual report to the people. It included a summary tivities in the form of a letter by Commission Chairman D. W. rart and charts showing where the dollars came from and they were spent.

York Hydro entered one of the most unusual floats in the ugh's Centennial parade. Bordered with garden flowers carpeted with real grass, the float nostalgically contrasted ast with the present. Girls in bonnets and long dresses vied their mini-skirted sisters, while modern electrical appliances

were contrasted with the old fashioned way of doing things.

An embarassing moment for Ottawa Hydro was turned into a theological lesson during the recent Royal visit. Shortly after Queen Elizabeth and Prince Philip arrived for morning service at Ottawa's Christ Church Cathedral, high winds caused a power failure and doused the lights in the church. The service was saved by the Most Rev. H. H. Clark who promptly remarked, "This will remind us that man and his works are mortal."

Brighter fall

In keeping with the back-to-school theme which pervades the country every fall, Ontario Hydro has launched a "College Study Lamp" promotion that will carry through until October. The project is the result of a six-week test program around Kitchener, Waterloo, Galt, Preston and Guelph last year.

Backed by newspaper, radio and television advertising, utilities and retailers are using billing inserts and promotional material in the province-wide program.

The study lamp market is wide open and represents a desirable off-peak load. Retail prices range from \$19.95 to \$25 and the lamp is the only one approved by the Illuminating Engineering Society — the world authority for lighting standards.

Gone west



The chairman says goodbye.

Jim Shields, chairman of Guelph Hydro in 1966 and the first half of this year, has been moved by his company, Omark Industries, to Portland, Oregon. Mr. Shields is shown flanked by A. G. Stacey, general manager, Mayor Ralph Smith, G. D. Palser, commissioner, and Harold Hewitt, treasurer, for a presentation to himself and his wife. Mr. Shields was first elected to the commission in 1964.

Centennial Lake

The name Centennial Lake will identify part of the body of water created by Ontario Hydro's Mountain Chute generating station on the Madawaska River near Renfrew. The Canadian Permanent Committee on Geographical Names has given its approval.

Centennial Lake extends about six miles along the river valley to a point about two miles east of the settlement of Camel Chute, and eliminates several rapids. A narrow part of the river joins it to Black Donald Lake, which is adjacent to the hydro-electric project and includes the headpond.

Quite a record

Carleton Place Hydro employees have established quite a record. Since 1958, the utility workers haven't had an injury which required compensation. And to acknowledge the nine years, the Electrical Utilities Safety Association has awarded the employees a certificate.

Local manager Ken Drummond accepted the award from



Nine years without an accident.

association supervisor E. V. Cole. The workers responsible for the record are Martin Desarmia, Jim Crain, Bob Service, Ben Fisher, Gray McIntosh, Dale Tysick, Al Hurdis, Ervy Crawford and Garry Harrington.

A family affair



Cool cat wins safety award.

At London PUC everybody gets into the safety act, even the children of commission employees. As part of a "Family Affair" campaign, the PUC organized a poster for employee's children from 8 to 14 years.

After judging, the winning posters were displayed in the window of the PUC building on the city's main street. Among the winners were eight-year-old Kathy Franklin's cool cat — safety hat effort.

June-July energy production

Primary energy provided by Ontario Hydro in June totalled 3.97 billion kilowatt-hours, an increase of 4.7 per cent over the same month a year ago. In July, the figure was 3.81 billion kilowatt-hours, an increase of 6.2 per cent over the same month last year.

For the first seven months of 1967, the total is 29.54 billion kilowatt-hours, up 7.2 per cent over the same period last year. Adjusted for seasonal influences, primary energy demand in June was 4.18 billion kilowatt-hours, 2.7 per cent less than May. The demand for July was 4.25 billion. kilowatt-hours, an increase of 1.7 per cent.

Allowing for seasonal influences, the July energy demand projected at annual rates would result in an output of 51.03 billion kilowatt-hours, which is 366.81 per cent of the energy demand in 1949.

A fearsome responsibility

An appeal to the electrical industry to re-examine its responsibilities in the field of public and community relations highlighted a talk by H. J. Sissons, Ontario Hydro's assistant general manager — Services, at the annual meeting of the Canadian Electrical Association. Excerpts from his remarks bearing on our responsibilities to the community in the light of changing social and economic conditions include the following.

"My thesis today is that we in this industry - manufacturer, labor and utility alike — have an almost fearsome responsibility and one which carries with it an even wider range of social and economic accountability than we have been accustomed to. We are to have a voice in the development of so many facets of our society that we had better not be too preoccupied with our traditional role to study them carefully.

... Historically, we in the utility field have operated under one generalized objective — to provide electric energy at the lowest possible cost consistent with satisfactory service. Successful as this concept has been, it today offers only the broadest guidance to those responsible for developing our general relations with the public.

To date, the concept has been interpreted in a very narrow sense - producing electricity, distributing it with maximum efficiency and maintaining a high level of technical maintenance service. Well, if any of you are faced with a substantial program of thermal generation you will begin to realize that through public demand and pressure your definition of 'low-cost' will change. Public pressure is forcing changes in coal purchasing requirements; in fact, in the area of air and water pollution, it has forced so much attention that basic technology must be examined. These things are demanded of us and I am prepared to say that the public is willing to pay for such betterments, within reasonable limits. Public satisfaction today is not always, or perhaps not even often, related entirely to economics. Cost, as a vardstick for decision in such areas, is relative and demands constant re-evaluation.

'Therefore, I feel that we can and must enlarge our concept and build into our fundamental philosophy a wider range of allowance for such factors which, though it may have some small effect on the cost base, will allow us to meet our expanded responsibilities.

'... I feel that these and others (problems) which will affect our larger responsibility should be trotted out on the table and dealt with - even if we make mistakes in the process. There are so many of them our tendency is to let them lie until they demand attention. Then often we must act from expediency rather than from principle.

". . . We will make yards with the community if we do something to accept our wider role - we stand to gain nothing but criticism and more and more interference

n our operations if we do nothing.

. Public relations is an activity which is the responsibility and function of management based on proper evaluation of public attitudes, identification of policies and procedures with the public interest, and finally, development of programs of action to earn public understanding and acceptance. This is our task."



eanliness is next to godliness, or so some stidious fussbudget once said, and if this is the se then we fail to see anything wrong with the otsman who has recently been in the news for sone-man clean-up campaign. Offended by a appearance of the well-soaked filter pads gularly discarded by a nearby distillery, he'd en picking them up and popping them into a wife's electric spin dryer, removing the pisture and restoring the pads to near-new notition.

Naturally, in improving the appearance of these ggy, shapeless, high-smelling old filters there'd en problems. Not the least of these involved disposal of the excess moisture which tended collect at the bottom of the dryer and our may Scots friend is to be congratulated for his ution.

Why not bottle it, he reasoned, and store the nky stuff in some out-of-the-way corner to be posed of from time to time at the whim of a isil?

The authorities, predictably enough, took a dim w of the whole affair, being unable to see any othetic merit in a collection of bottles whose needs had contributed nothing to national fers. He was ordered by the courts to cease didesist but not, we think, before establishing 0-proof evidence of the versatility of the idern electrical appliance.

While it may be difficult to dig the goings-on the younger generation, some of our senior zens also tend to react in a pretty peculiar nner to a given situation. Take the case of the onto magistrate who recently felt called upon ick off a pretty news reporter who was coverthe august proceedings. The grey-haired ge actually took objection to the amount of she was revealing!

Iso in Toronto, City Hall authorities ordered fee office workers to lower hemlines substany and, surprisingly, the girls got no support en they took the problem to their union. The in question was too high, ruled the union, definitely constituted management territory. inally, there was the city father in Etobicoke), in backing a proposal to close borough is before midnight, observed: "I can't think anything anyone could do in a park after o.m. that would be legal."

e may be right, of course, as there isn't much

anyone can do anytime in Etobicoke that's 100 per cent legal. But these instances are enough to suggest how, to the hippies, the older generation appears to be teetering on the brink of the mental menopause.

■ Coffee, tea or LSD may be the choice offered by today's swinging host but we know one chap in the news of late who'd prefer current, juice or kva. He's the fellow who temporarily fouled up a recent project in Toronto to cure alcoholics of tippling through the judicious application of electric shocks. It seems this particular patient, turned on by the juice, kept asking for more voltage.

Not to be thwarted, the researchers turned to "white noise"—a sound likened to that of jet engines at close quarters—and got on with the job of weaning Sparkie from the whisky. Now, even if he does develop a taste for decibels, he'll have no trouble getting his kicks. What with generals around like Le Grand Charles (derived from the Ojibway meaning "meeting place of the great nostrils"), the world is full of sound and fury signifying, as Billy once observed while shaking his spear—nothing.

News items tending to leave the reader hoisted high on the horns of a dilemma have always annoyed us and that one about the London restaurateur and his belly dancers was a real humdinger. As reported, he issued the following instructions to the girls: "If there is a titled dignitary in the room, dance only on the stage. If there are city sheriffs, aldermen or councillors, dance within four feet. Bankers may be approached at two feet and insurance executives at one foot."

Who, if you'll excuse the expression, in $h\ldots$ is being insulted, the titled dignitary or the insurance executive?

■We are indebted to the latest issue of Hydro's own estimable farm publication, *The Symbol*, for an erudite and stimulating treatise on the effects of colored illumination on poultry production. The item comes out strongly in favor of red lighting as a preventative for such mischievous carryings-on as feather-picking and cannibalism. It doesn't make a kernal of difference whether the light source is fluorescent or incandescent, so long as it's red. Performance, we are assured, is in no way adversely affected.

It's strictly a lay opinion but we suspect some chicks actually perform better under a red light. In any event, we'll go along with our farm specialists in their assertion that "nothing is so indispensable as the appropriate light at the right location."

If *The Symbol* is concealing a moral, it's probably to the effect that experience is still the best teacher. Ancient and honorable as it may be, the poultry business can still pick up a trick or two from the older professions.

Speaking of birds and morals, another incident comes to mind featuring both and with a dollop of sex for added interest. It's about a love tryst down Peterborough way in which the two participants came to a tragic end in the classical tradition but in such a fashion as to leave the audience as well as the protagonists up in the air.

Two great horned owls died instantly when they touched beaks while sitting on separate power lines. Linemen, tracking down the cause of the momentary power interruption, came across their bodies still suspended upside-down from the wires.

Renowned for their wisdom, the death of these birds presents a conundrum. Did they perform their kiss of death intentionally in the light of present conditions such as the housing shortage, the high cost of living and the procrastination on the part of parliament in divorce law reformation? Or were they actually ignorant of the laws of electricity under which they might have perched side-by-side on the same wire and carried-on to their heart's content?

It's the connection that's fatal and if these owls were oafish enough not to realize it, then we have long been the victims of skilful and unethical image-building on the part of the birds. We've been taken in by a wise look and a silence occasioned by vacuousness of mind rather than pre-occupation with the profound.

Being of a romantic turn of mind, and somewhat reluctant to admit being had, we prefer to think their end was deliberate.

■It's pretty well forgotten now but remember how those lights used to flicker in Toronto and Southern Ontario before they changed over from 25 hertz to 60 hertz? What's that — you think we're nertz? Not necessarily. Hertz is an international term meaning cycles per second and we've noticed it cropping up more and more in journals here and in the United States.

It's not the only weird word we'll have to get used to for one reason or another. Computers, for example, speak a language of their own and as the Hydro system expands a few new terms may be called for in order to trim off some of the zeros.

Ten years ago, for example, few talked in terms of megawatts but they crept in because it was handier to write 100 megawatts than 100,000 kilowatts. Next step is the gigawatt, no less. Last year's peak was in the neighborhood of 8,500 megawatts but only 8.5 gigawatts. Watts next? Terawatts, that's what. With this unit, last year's mind-boggling energy production of over 51,000,000,000 kilowatt-hours becomes a very manageable 51 terawatt-hours.

It's all very logical, of course, but we can't help giggling over that gaggle of gigawatts.

■ Time marches on but, as Billy the Bard once pointed out, there isn't much new under the sun. We reprint the following two newspaper items without comment:

Stratford Beacon Herald, April 13, 1967.

"Listowell — The Public Utilities Commission here will experiment with a coin-operated hydro meter to dispense pre-paid electricity to slowpaying customers."

Tillsonburg News, March 15, 1934.

"A new type of meter has been purchased by the Public Utilities Commission for hydro users whose accounts are not paid regularly. After the meter has been installed, it will be necessary to drop a twenty-five-cent coin in the slot before electricity is available."





fashions for the future

Toronto Hydro really turned them on with an imaginative combination of futuristic fashions and appliances for tomorrow at CNE '67.

Attractive models in way-out clothes tantalized fair goers with the very latest in electrical aids to modern living. Shimmering Miss in silver is shown with prototype range featuring a bottom oven capable of both conventional and micro-wave cooking.

The show came to a climax in a kitchen of the future. From her eyrie on the 300th floor of an imaginary apartment building, the housewife could program her meals for the week on a tiny computer, dial the store and scan its shelves by television and select lighting and room scents at the touch of a button.



·they're all smiles in etobicoke
·desert in the dining room

ontario hydro news

october 1967

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the cover

Pilot Ken Wallingford familiarizes himself with the controls of a turbo-jet helicopter, latest addition to the Ontario Hydro fleet. While the machine gives a faster, smoother and quieter ride than conventional helicopters, operational savings are expected to be considerable.

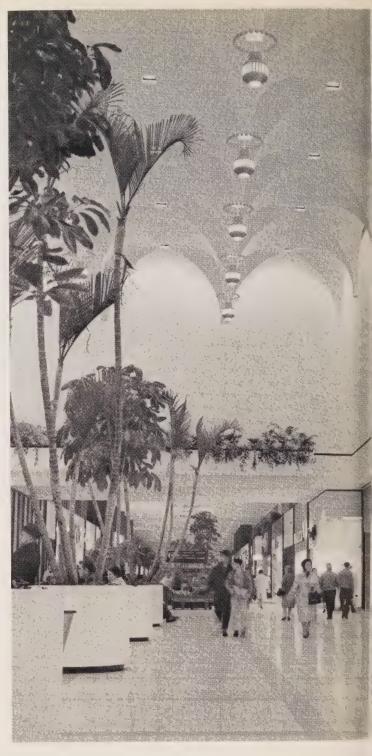
Further pictures appear on page 18 (photo — Ron Brown).

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Avenue of the palms. It's June in January — and all through the year — at Toronto's Yorkdale mall, one of the best examples of climate control in a commercial establishment. Yet many Canadians continue to live in homes more arid in winter than the desert and as damp in summer as the steaming jungles.

It's a situation that's beginning to change as the benefits of comfort control become known. Indoor environment can be tailored to measure and the day may be approaching when out cities and towns will be independent of the weather. On authority suggests that "the possibility of enclosing a new electrically heated community appears to be just around the corner".

Present trends and future promises in this fascinating fiel are discussed on page five.



Dining in the valley of the giants.

fifty-acre city

by Bob Morrow

Howard Street, a short stroll from Toronto's Sherbourne subway station, has seen better days. With gaping windows, its dingy Victorian houses stand cheek by jowl. At the corner of Rose Street one of the city's oldest fire stations awaits the wrecker's hammer. But around the corner a dozen high-rise apartment blocks stab into the sky like exclamation points.

This is St. James Town, an urban renewal project which signals a new approach to city living. Eventually it will house about 15,000 people — as many as the Town of Orillia — in some 6,000 apartment suites, most of them electrically heated.

The total project, officially opened last month

with a loud splash of promotional hoopla, will ultimately use as much electricity as the cities of North Bay, St. Thomas or Brockville. It's the biggest electric heating project in Canada, stamped with the Triple Seal of Quality of the Ontario Electrical League.

Initial plans call for 16 buildings, two of which will be the tallest apartment blocks in the Commonwealth with 32 storeys and 567 suites apiece. Ten buildings have been completed and two are under construction. All but six, built before the switch to the all-electric concept two years ago, will be primarily heated with radiant ceiling cables.

By the early 1970s a total of 22 apartment

st. james town is the biggest electr



Promotional hoopla complete with music and pretty girls marked the St. James Town opening. Thousands took advantage of the 10-day open house that followed and Toronto Hydro made sure the project's many electrical features did not go unnoticed. blocks will displace 600 blighted homes in this 50-acre area of central Toronto. Power demands in the area will eventually be about 20 times the load prevailing before the private enterprise project started in 1957, according to Toronto Hydro estimates.

St. James Town has too many electrical features to enumerate, yet on a daylight tour, when the spectacular lighting is off, you wouldn't see much. Electricity is everywhere but it's unobtrusive.

For example, Howard III, typical of its apartment blocks, has these features:

 Underground service brings 13,750-volt supply to primary transformers located in underground vaults outside the buildings.

— Six big electric water tanks — utilizing offpeak power — provide a total capacity of 25,000 gallons. By mixing with cold water an ave 35 gallons of hot water is available t apartment at 140 degrees.

— A control system keeps peak demand optimum by tripping off hot water heati garage ramp snow-melting system, sw pool water heaters, basement and sub-biheating.

At night it's an electric wonderland of vapor floodlights and incandescent plobes. A glass-enclosed elevator shaft be 22-storey ribbon of light; nearby, ambe lights play on a cascading fountain.

A typical apartment has radiant cable heating, thermostats in each room, pl electrical outlets, a chandelier in the dining kitchen equipped with a high-speed

eating project in canada







e (with a range hood, naturally) and a large gerator-freezer. The bathroom has a wallnted radiant heating unit.

eat reclaimers capture 80 per cent of the te heat exhausted from kitchens to warm the -lighted, carpeted hallways and, if necessary, lementary wall heaters cut in automatically. ectrically-heated apartment blocks are, of se, an air pollution officer's dream. Another irtant clean-air feature: instead of incinerators urn waste, the buildings have refrigerated ment rooms where compacters compress garto be trucked off by the city. They are fed by es on each floor.

e apartment blocks cover only 15 per cent of and. Between the buildings are well-mani-1 lawns, miniature putting greens, squash and tennis courts, and two Olympic-size swimming pools. The asphalt squash courts have underground piping systems so they can be turned into artificial ice rinks.

Each building has its own indoor swimming pool, exercise rooms, bowling alley, sauna baths and swank recreation room. The entire recreation program, taken over by the YMCA, is run by a full-time "Y" program director and a staff of 20.

The project, primarily designed for middle income families, also offers 558 low income apartments and 995 Ontario Housing Corporation suites with rents geared to income. It surrounds a public school and soon will have a shopping centre with a food chain store.

The project has required - and still requires close co-operation between Toronto Hydro, Ontario Hydro, developers, architects, consulting engineers and contractors. At present a Toronto Hydro official spends six hours a day on site dealing with 101 details.

How about heating costs? "Installation costs will be equal to or lower than with any fossil fuel heating which does not have electricity's advantages," says M. A. Konforti, chief consulting engineer. "Operational cost . . . is up to 20 per cent lower than with any other type of fuel."

Potential tenants may be in for a surprise. Twobedroom suites in the 22-storey Ottawa building a hop, skip and jump from an outdoor pool - start at \$177.

That's a pretty good rate in Metro Toronto's tight housing situation any day. And the Hydro bill's included in the rent.



comfort conditioning

Les Dobson

fornia's Death Valley is inhospitable in the eme. Temperatures may hover for days around degrees, and have been known to reach a ing 134. Flanked by the shimmering Sierra ada this is one of the hottest — and driest s on earth.

en have perished in this arid desert region. Yet startling truth is that in winter the average adian home is even drier.

n a crisp January day the relative humidity in own living room may sink below 10 per cent. means that the air contains only one-tenth the sture it is capable of holding. For comfort, the tive humidity should be around 40 to 50 cent.

dd things happen when the atmosphere gets dry. You wake up with a tongue that feels like k, furniture joints pop as the glue dries out, es and carpets turn brittle, plants droop and ks crackle off surprised finger-ends from the harge of static electricity that under more humid ditions would leak away.

Problems of health arise," says a medical expert, cause too dry an atmosphere devitalizes and even damage the mucous membrane of the e, making a person more susceptible to colds." cites laryngitis, chronic coughs and nose bleeds probable side effects to a sustained period of humidity.

oo much humidity is just as bad. Apart from the my, fungus-producing conditions that go with humidity, the health aspect also makes denidification important. Germs multiply quickly dry atmosphere, the breeding rate dropping off ne moisture content rises. At 50 per cent relative nidity it is practically nil. Once the relative pidity reaches 84 per cent, the germs are just as re again.

nly in the past half-dozen years or so have adians begun to realize the value of humidity rol. Ontario's humidifier sales have more than bled since 1960; dehumidifier sales have insed fivefold. Yet these are just steps along the to a remarkable revolution in indoor living environmental control.

electric comfort

ood, old-fashioned air really gets the works n we establish complete control of the elets. Rooms are heated in winter; cooled in mer. Moisture is added when the air is too dry; wed when it's too clammy. Carefully regulated Ints of fresh air are introduced and the entire sphere is given an electronic "wash". Elecc cleaners give dust particles an electric charge collect them on metal plates carrying an site charge. It's possible to blow cigarette e into one end, and see nothing emerge.

en the tang of the backwoods is added to the sphere of some homes, the touch of a button ng pine-scented spray through the rooms piped music softly plays. And all this in an onment completely sealed off from the outside

Among the Canadian pioneers of total climate control was the \$7 million Thorncliffe Market Place in Leaside, which provides all-season shirt-sleeve shopping with access to more than 40 stores under a single roof. Then along came the enclosed malls of one of the world's largest shopping centres -

on the home front

Already the total environment concept has caught fire in the housing market, the number of installations rising from nothing six years ago to nearly 10 per cent of all new homes.

The climate control "package" offer hinges largely on forced-air systems. Buyers have the option of purchasing either total environmental control or simply the heating system and adding to it later. For homes without forced-air heating, people have a wide choice of single-room air conditioners, humidifiers, dehumidifiers and electronic air cleaners. Although obviously not as compact, separate appliances can be moved from room to room and give a high degree of flexibility.

Although power humidifiers and electronic air cleaners are relative newcomers, the idea of universal air cooling has long been established in the United States, particularly in the sunny south. Many U.S. electrical utilities experience their greatest demand in summer, when air conditioners place a heavy load on power resources.

"Air conditioning was probably forced on them earlier because it's harder to keep cool in a warm climate than keep warm in a cold one," says a Canadian engineer.

South of the border, the average businessman steps from an air-conditioned home into an airconditioned car or bus and drives to an office which, again, is air conditioned. In Canada a similar trend is evident. It would be unthinkable today to build a new office block without some form of environmental control. And the experts estimate a five-year time lag between industry adopting an idea and it being accepted in the home.

'It all boils down to a question of economics," says John Brodie, of Ontario Hydro Sales. "People work in air-conditioned offices and get to thinking it would be nice at home. They have the ability to purchase and suddenly it becomes essential."

At one time, he says, the air conditioner was mainly an emotional purchase bought by perspiring customers in the literal heat of the moment. Today pre-season sales are taking an ever increasing bite of the annual turnover.

It's a common misconception that the air conditioner is strictly a cooling device. Because it does cool, however, it also lowers the humidity (cool air holds less moisture than warm). This, in turn, aids bodily comfort by increasing the evaporation rate from the skin, thus removing excess heat.

To give some idea of what humidity means, the atmosphere of a living room 20 feet long and 12 feet wide can hold more than two pounds of water.

Dehumidifiers work on the same principle as the air conditioner, passing warm air over a cooling coil and extracting excess water in the process. Their chief application lies in removing summer humidity from homes with no air conditioning or in making damp basements habitable. A 120-degree spread between indoor and outdoor winter temperatures contributes toward condensation problems that make the dehumidifier a year-round proposition in some northern homes.

One of the electrical industry's great hopes in the field of climate control is the heat pump, which provides warmth by extracting heat from the outside air, raising the temperature even higher and delivering it inside the house. The action is reversed in summer for cooling.

Heat pumps work much the same as the family refrigerator, which is cold inside and invariably warm on the exterior. They have already been used with great success and further development is expected to make them even more attractive from the standpoints of price and efficiency.

But what of the distant future? Have we reached the ultimate when every home, office and industrial building enjoys the benefits of complete climate

roses in december

Not if the scientists have their way. The idea of domed cities entirely sealed off from the elements is fast approaching reality with the appearance of new plastics and advances in construction techniques. Toronto engineer Terence McLorg, for instance, thinks that it's just around the corner.

Mr. McLorg, executive vice-president of the Canadian Refrigeration and Air Conditioning Association, estimates that 2,300 air-supported plastic domes could be used to cover three-quarters of Metropolitan Toronto using the effect of the sun and heat generated by the inhabitants to help control the year-round temperature. Pollutants would escape through the top of each dome; filtered air would be drawn in at the base.

Precipitation over the entire area of 145 square miles could be collected with ease - electric heaters melting snow from the domes - to provide most of the city's water requirements. Wind, rain and snow would be unknown in this dome-shaped Utopia. Flowers would bloom 12 months of the year while tennis and golf would be year-round recreations. And Mr. McLorg doesn't put the cost higher than that of a new subway system.

But it's in the completely new, nuclear-electric community that he foresees the real potential of the idea. Covered with their transparent plastic membrane, such cities would be free of pollution and would provide an eternal spring-like environment, even in Canada's frozen north.

"Major companies involved in the American space program are increasingly devoting their energies to the problem of building communities as total entities from the ground up," says Mr. McLorg. "The possibility of enclosing a new electrically heated community appears to be just around the corner.

"In fact, we could almost do it now."

Recipe for an art gallery: take two old buildings, renovate, add imaginative lighting and electric heat, stir well. That's the formula at Stratford - and it seems to be working well.





environment fit for a mona lisa

Nature has always exercised an enormous influ over art. Yet nature is increasingly controlled interests of art and the culture-conscious c Stratford, Ontario, provides one of the most r examples.

In fact, a humidity of 50 per cent and an 70-degree temperature are providing the idea vironment for a collection of valuable painting the newly-opened Rothmans Art Gallery.

"Actually, any temperature is OK providence

electricity aids the arts





Intricate stonework and wooden columns bring their share of problems to workmen restoring Toronto's St. Lawrence Hall to its former splendor. Centre photograph shows hall as it appeared in 1873.

mains constant," says Robert Ihrig, director of e gallery. "It's the fluctuations in temperature hich affect canvas and cause the paint to crack." The gallery opened this summer with a \$400,000 chibition of Canadian paintings from the National allery in Ottawa. Half a dozen other exhibitions e planned this year. "We've had a very good ception from the public and are averaging about 000 visitors a week," says Mr. Ihrig.

Stratford's latest venture into the arts is located two buildings of 1893 vintage that once housed uipment to pump the local water supply from tesian wells. The buildings, formerly operated by a local PUC, are connected by an entrance hall do contain four lofty rooms, three of which will be used for exhibitions and one for lectures, film ows and art classes.

Air is electrically heated, cooled, filtered and imidified to provide the best possible environment for priceless art treasures while the lighting stem shows particular imagination. Spot lamps a mounted on strips of electrified track running elength of the ceiling in each gallery. These mps can be moved along the track and swivelled highlight any particular painting or piece of ulpture.

Electric heat proved ideal for the gallery because its cleanliness and ease of control. "Within 10 ars every gallery will have to install some type of midity and temperature control system if they pect to borrow from a larger gallery," Mr. Ihrig ds.





climate control for ballerinas

Once its enraptured audiences listened to the dulcet tones of Jenny Lind or the stirring voice of Sir John A. Once frock-coated gentlemen danced a gay polka with their silk-and-satin ladies.

Now Toronto's 117-year-old St. Lawrence Hall is being turned inside-out in a Centennial-year drive to restore the building to its former splendor. Walls are being torn down and rebuilt, floors strengthened with two-ton beams of steel, ceilings remodelled in the ornate Italian styles of the mid-1800s, windows replaced, stonework refurbished.

Its Great Hall will appear virtually as it did the day the building opened to replace property razed in a fire that swept the King and Jarvis area. It will be authentic right down to the huge gas-lit chandelier — but with one important concession to the twentieth-century. And that's electric power.

Electric lights will be concealed in the ceiling, an elevator will whisk people to the third-floor hall, electric heating and air conditioning will keep the building as comfortable as any multi-storey office block. According to construction foreman Jack McGowan, the heating system will replace five separate oil furnaces.

Climate control is particularly important as the building will be the home of the National Ballet of Canada. The system will permit a cool performance in the Great Hall, diverting excess heat to other parts of the building. Similarly, on a sunny day, the southern exposure may have heat to spare for the northern. The ballet will have a rehearsal room and showers on the second floor.

As in the old days, the St. Lawrence Hall will also be available for meetings and social functions.

Already the job has encountered its share of problems. Not the least was finding craftsmen skilled in the arts of decorative plastering and elaborate stonework. It took 15 days of intricate chiselling for a stone-cutter to reproduce a single sandstone emblem for the outside of the hall. And five had to be made from scratch.

Then the project has been plagued by strikes. Worse still, the entire east wing toppled into the street last spring. "Chips had been flying off the wall all day," recalls Mr. McGowan. "Around four o'clock I was so worried that I ordered all the men out of the building and got them to stop the traffic on King Street. As I went back to look at the wall, the entire wing started to collapse. I just made it across the street."

The City of Toronto is putting up \$1,375,000 toward the project and is doing the actual work. It expects to recover about \$100,000 from the federal government under the winter works scheme. Two organizations have also adopted the hall as their Centennial project — Toronto Chapter of the Ontario Association of Architects and the Toronto Construction Association. Toronto Historical Board is doing research.



Dr. V. S. Wilson is honored for services rendered



Guest-of-honor Dr. V. S. Wilson, left, renews acquaintances with W. Ross Strike, right, retired chairman of Ontario Hydro, and W. J. Fisher, former New Toronto Hydro commissioner.

It was a memorable evening for Etobicoke. Out came the red carpet, flags fluttered, popular melodies were played on the organ and the rain held off right to the final button-pushing ceremony.

The occasion was the official opening of Etobicoke Hydro's V. S. Wilson Administration Building. And the list of assembled guests included sufficient personalities to compile an electrical *Who's Who*. But no one was prouder than the man after whom the building was named — Dr. V. S. Wilson.

The 70-year-old retired dentist, who served as chairman and commissioner for 30 years, was characteristically modest when the tributes were handed out. "I think I should go home, look in the mirror and see whether it's the same guy I knew before," he said.

Praising past and present staff and commissioners of the Etobicoke utility, he added: "Any honors given me tonight should be shared with these people. They have been my support in serving you."

The present chairman of Etobicoke Hydro, R. Clarke Wardlaw, said the new building was completely paid for. The final price was even less than the one originally tendered. "In naming the building after Dr. Wilson we hope to have a constant reminder of his high standards of public service," he said.

Cuest speaker George E. Gathercole, Chairman of Ontario Hydro, also complimented Dr. Wilson

on his Hydro career. "He exemplifies a spirit of service to his fellow men," said Mr. Gathercole. "He has not been content just to sit back and utter words, but has translated them into action."

Under the impetus of Dr. Wilson's drive, Etobicoke Hydro grew from a small rural utility serving 3,700 residential customers into a \$20 million-a-year electrical sales organization. With more than 80,000 residential customers and about 5,000 commercial and industrial consumers, it is now one of the province's largest utilities. Each year its electrical load grows by an amount equivalent to the needs of a city the size of St. Thomas or Brockville.

Etobicoke was the first municipality in Ontario to build an all-electric sub-division. It was also the first utility to introduce electronic data processing.

This is the organization that Dr. Wilson helped to build. Recognition of his leadership in electrical affairs came in 1962 when he was elected president of the Ontario Municipal Electric Association, which represents municipal systems across the province. He subsequently headed several committees and became provincial chairman of the joint Centennial Committee of the OMEA, AMEU and Ontario Hydro. During all his time with Etobicoke Hydro he never missed a commission meeting.

(continued)

Tzy opening for a brisk utility . . . Depen-air formalities in Wwing.

nome etobicoke

The new administrative block is an integral part of Etobicoke's space-age municipal centre. It rises four gleaming storeys from a concrete podium formed by the basement while a covered walkway connects it to the borough offices next door.

Special attention was paid to landscaping. A 170-space parking lot in front of the building is set below eye level and surrounded by shrubs to leave an uncluttered view of the offices from nearby Highway 27. At the back, water cascades symbolically over 200 tons of rock — a sparkling testament to the importance of hydro-electric power. Customers entering the building can see this backyard waterfall through the glass-walled rear of the lobby.

Tropical plants and potted palms flourish in the controlled atmosphere. Heat generated by the building's lighting system is recovered to provide winter warmth. Supplementary heating is not required until the mercury outside drops below 32 degrees. Colors are used sparingly but boldly to contrast with the predominant blacks and whites.

Elevators whisk visitors and staff from one level to another:

Ground floor — reception, an armchaired lounge for customer interviews, assorted offices and a 70-seat auditorium for cooking demonstrations, lectures, movies and meetings.

Second floor — executive offices, conference rooms, accounts and data processing.

Third floor — engineering offices, drafting department and staff cafeteria.

Fourth floor — unoccupied, for the moment, but not for long if the past record of growth is any

It was a short ceremony. Afterwards, Dr. Wilson joined the guests as they inspected the building. And when it was all over, the man who has been Mr. Etobicoke Hydro for so long left the bright lights, the hubbub and the handshakes for some fishing, a bit of travelling and the peace and quiet of retirement.

Etobicoke Hydro and some of the men who chart its course. At commission meeting are Mayor E. A. Horton, Chairman R. Clarke Wardlaw and John P. MacBeth. At his desk is chief engineer J. A. Torrance. Bird's-eye view shows new building to right of municipal centre. Drafting department and customer reception area are other handsome features. Landscaped waterfall is visible from the lobby.

















omptly grabbed a hazel wand, divined some ater and established a convent there.

In a more modern vein, there's the 73-year-old wser who found water in the 1940s for the wn of Manitou, Manitoba, after engineers had nk a number of dry wells. And history records ousands of other examples. Just what makes e rod dip, however, is a matter of much conture.

Dowsers say it's an inexplicable force pulling em to the object of their search. Canadian author N. Pike offers a more scientific explanation. He s that underground water emits lines of force nilar to an electrical field, but that the lines travel ward and outward to act on the dowsing rod. wever, instruments that can pick up the minutest ctrical currents have failed to register anything the proximity of underground streams.

Inbelievers won't say that the diviner surreptiusly dips the rod himself, but do point out that one can hold a stick absolutely motionless. We make unconscious, imperceptible muscular ntractions that could set the rod a-quivering.

Despite the doubters, quasi-recognition has en given the divining art in the most unusual ces. During World War II, the Royal Engineers erated a course in water dowsing. Students re issued forked twigs of hazel and willow and duates proved moderately successful, particuy in North Africa where water was so vital to ert operations.

he United States Department of the Interior ognizes dowsing to the degree that it has olished a book describing the process and the atroversy around it.

oronto's Reference Library, in its own way, has en water divining recognition. Any book (and re are a few) dealing with the subject is catalogued in the Science and Technology section, which has to indicate something.

To a degree, Ontario Hydro also places faith in dowsing. Not that the rods are used to locate possible hydro-electric sites. Rather, they have been used to zero in on underground water during well-drilling at such building sites as area offices and the Development and Training Centre near Orangeville.

Hydro people concerned with the establishment of these buildings are well split into believers, unbelievers and those who just don't know.

Exponent of the art, building inspector Harry Spofford, learned to dowse as a boy. Any time there's a well to be drilled and he's around, Mr. Spofford divines the location with a willow or green apple branch. "The well driller has always hit water wherever my dowsing has pointed the spot out," he says.

On the other side of the fence is project engineer Noble Dean, an unbeliever. "I always go to a building site, decide where I want the well and tell the contractor to drill there," says Mr. Dean. "Sometimes he may use a water dowser to check the spot, sometimes not - but it really doesn't matter."

He adds: "Admittedly the rod moves when Harry locates an underground stream, but I could walk from Toronto to Montreal with the stick in my hands and it wouldn't move an inch."

Backing the scoffers is no less a formidable body than the United States Geological Survey. "It is doubtful whether so much investigation and discussion have been bestowed on any other subject with such absolute lack of positive results," it declares. People are urged not to spend money for the services of a "water witcher" or to purchase any machine or device for locating underground water.

Nowadays, however, dowsing for just plain

plated or plastic. A California doctor has even invented an automated dowsing machine. Called the Orbiting Talisman, he claims it can predict stock market trends and pick winners in the sport of kings aside from finding water. The advent of such materials and devices would seem to upset the theory that the affinity of twigs for water draws the dowsing rod down.

Dowsers feel that modern materials have put them steps ahead.

As Harry Dahl-Jensen, a dowser who lives on the fifth concession in Markham Township, explains: "If I haven't got my regular steel dowser with me, I'll use a reshaped wire coat hanger rather than a twig. Metal rods enable me to determine the depth, width and direction of flow of an underground stream more accurately."

Finding subterranean moisture is what might be termed a hobby with Mr. Dahl-Jensen. Since he discovered his gift for finding water as a boy scout in Norway, he has divined a forgotten number of wells in 33 different countries. But it's never been prompted by monetary gain.

'The only time I've ever divined for water is when there was a need for it," he says. He put the art to good use in villages in Malaya, where he spent 10 years prior to World War II, and at air bases where he was stationed during the war.

Being able to find water has also come in handy since he came to Canada in 1946 and moved into the real estate business. One developer was going to buy a tract of land through Mr. Dahl-Jensen if water could be found on each of the one-acre lots. Mr. Dahl-Jensen dowsed 41 wells in one day and the deal was closed.

"I'll never do anything like that again," he says. "I was so weak the next day I had to stay home and rest. Divining or dowsing seems to take a lot out of you, even if it's only one or two wells you locate, you always feel the strain."



talk about hydro

Matters of prime importance to the public power enterprise in the province are being discussed at district meetings of the Ontario Municipal Electric Association from Sioux Lookout to Goderich and Peterborough. Topics range from public relations to vandalism and from construction strikes to the Smith report. Some highlights of the first meetings are included here.



Handling the affairs of Georgian Bay MEA for the coming year are (left to right, front row): T. Stevenson, Chesley, 1st vice-president; D. A. Watt, Orangeville, president; A. McAuley, Elmvale, 2nd vice-president. Back row: David Kennedy, Kincardine; E. R. Alexander, Barrie; H. J. Murphy, Barrie, secretary-treasurer; N. H. Robertson, Owen Sound; W. E. Theaker, Paisley; W. R. Tomlinson, Port Elgin.



Veteran commissioners receive long-service awards from Ontario Hydro Chairman George E. Gathercole at the Georgian Bay MEA annual meeting. From left are N. A. Oehm, Stayner PUC (16 years' service); R. G. Charter, Sunderland Hydro (17); J. W. Chambers, Arthur PUC (17); Mr. Gathercole; David Kennedy, Kincardine PUC (15); Dr. J. E. Wilson, Barrie PUC (15).

OMEA president Dr. J. D. Fleming calls on history to support the publicly owned municipal system of power distribution.

sound principles don't change

Ontario's municipal utilities are the true owner the province's electric power system and have right to an extensive say in Ontario Hydro p said Dr. J. D. Fleming, president of the Ontar Municipal Electric Association.

Dr. Fleming, who has frequently urged local utilities to tell the story of their relationship wit provincial commission as a modern example truly democratic procedure, added that unless the municipalities had a say in Ontario Hydro policy they could be saddled with debts over which they had no control.

Speaking in Sioux Lookout at the start of his round-the-province tour of district association meetings, Dr. Fleming said the municipalities incurred large debts and built extensive syste to receive and redistribute electricity. If the wholesale rates at which they bought power from Ontario Hydro went too high, they woulose customers to other forms of energy and I with a heavy debt to be financed out of decrea revenue.

"Every expense of the Hydro-Electric Power Commission is reflected in the wholesale priof power," he said. "Therefore the municipa are properly interested in how the commissic operates and where and how much money it spends.

"Every act of the Hydro-Electric Power Commission is reflected either in the cost of power the service provided, and without the municipal to buy power there would be no HEPC. Surfit is sense that these municipalities have a vigreat interest in the affairs of the HEPC. Not only do they own the system—they are the system's chief customers."

Dr. Fleming, a Dundas dentist, said the OM represented more than 340 local Hydro utili

"It is committed to taking united action on a lelectric utility matters," he said. "It fosters standardization of equipment and systems. I works in conjunction with Ontario Hydro 1 promote the development of the province's electrical utilities and seeks to secure legis of that will promote their welfare."

The opinion and influence of the OMEA we all great consequence to Ontario Hydro, the problegislature and the people of Ontario. "It was the voice of those who gave us this unique system of hydro-electric service and is the property of those who today continue to carry out the responsibilities of operating a municipally of the electrical distribution system — the finest in the world.

"It may be hard to get excited about a serv which is so well provided that it can, almostaken for granted," he added. "But try to g excited – just a little bit – because Hydro is yours."

rlier, Dr. Fleming outlined the historical ckground of the electric power movement in the front the time when private power mpanies began harnessing the Niagara River the turn of the century.

here is little doubt that the demand for power be transmitted and distributed by the municipalisarose from the fact that others viewed the vate electric interests as greedy and arrogant dithey had contributed greatly to the uneasiness the citizens of the province," he said.

end us your ear

ntario Hydro commissioner n F. McRae sees increasing impetition for attention and eater difficulty in reaching the bunger generation with e Hydro message.

day's "plugged-in" society is submitted to the abarrage of advertising messages that the cortance of the public utility is frequently lost, tario Hydro commissioner Ian F. McRae told mbers of the Georgian Bay Municipal Electric sociation.

McRae said that electronic media had nsformed our way of life. The average North lerican was exposed to 1,600 advertising ssages a day and the effort to be heard and led was a major problem for any organization.

the future, we can expect this background se to be louder, and competition for attention become keener, as the Canadian eye and is bombarded from all directions by every d of concentrated stimulus known to man," added.

other problem in getting the utility message coss was that young people took electricity for need. Every second person in the province was er 25 and, whether their names appeared on billing lists or not, each one was a Hydro comer.

is younger generation, which makes up such tree part of our population, has no direct erience of depression, wartime restrictions or war shortages. In the main, its formative years spanned an era of prosperity, but this eral affluence has shared the spotlight with ething like two decades of cold war," said McRae.

these and other reasons our young people have frent values and attitudes from those of their nts. They are healthy, intelligent and somewhat than enthusiastic about the state of the cd they will soon take over from their elders. It take electricity for granted, and who can be them when their newest frontier is space?

the force of this invisible energy permeates aspect of their lives," he said.

McRae added that the basic image of a c utility rested on its service. "Without ient service at reasonable rates, no public can maintain public acceptance. And without at is in deep trouble.

"A public utility must continuously fill its reservoir of goodwill against the day when there is even a minor failure of service. Since our customers cannot take their trade to a competitor, our public relations difficulties are even more serious than those of industries which are not monopolies."

The conscientious commissioner would continually hold up an imaginary looking-glass to his organization. He would ask himself whether the policies and practices of his utility reflected a concern with the public interest.

"Remember that public opinion is structured on self-interest, not information," he said. "The act of making certain key facts available does not automatically produce enlightenment or public support."

The public made no distinction between Ontario Hydro and the local utilities, Mr. McRae reminded delegates. "In speeches or even in conversations, people interpret me as speaking for Hydro in Ontario, and that applies to you as well. As directors of this great enterprise, we either enlarge or diminish its stature each time we make a public utterance.

"The public and our customers have neither the time, the interest nor the inclination to separate our different positions or responsibilities," he said.

"We all represent Hydro."

georgian bay on the move

District 2 OMEA discusses problems ranging from electrical storms to regional government

A record number of nearly 300 delegates and their wives attended the two-day convention of Georgian Bay Municipal Electric Association at Port Carling, Muskoka. Members rolled up their shirt-sleeves and hammered out policy for the coming year, discussing problems that ranged from annexation to finance and the supply of electric power.

Ontario Hydro Chairman George E. Gathercole told the meeting that strikes in the construction industry had forestalled the Commission's plan to add more than one million kilowatts of new generating capacity in 1967. "This was to have been the largest incremental increase in capacity in the Commission's history, but it was not to be," said Mr. Gathercole.

While agreements had been reached with 11 of the 13 member unions of the Allied Construction Council, two unions – the Ironworkers and the Plumbers and Pipefitters — were still out in a strike now approaching five months.

"The consequences of this have been grievous," Mr. Gathercole said. "With construction crippled at all major generating projects, and the load increasing, the Commission's power reserves are thinner than we would like to see them."

In spite of this, some new generating equipment had been brought into service, water conditions had been very satisfactory and interconnection capacity had been increased. "Barring unforeseen circumstances we expect to meet our requirements this winter," he added.

Referring to the immense costs involved, Mr. Gathercole expressed the hope that out of this experience would emerge a more effective way to resolve disputes.

The Chairman outlined some observations and recommendations relating to Hydro made by the Ontario Committee on Taxation, and suggested that they would require careful consideration by Hydro and the municipal utilities.

Commenting on the Hydro Hall of Memory — joint Centennial project of the OMEA, AMEU and Ontario Hydro — Mr. Gathercole said that 70,000 visitors had seen the Niagara Falls display since the official opening in February.

I. Carl Ingimundson, newly appointed manager for Ontario Hydro's Georgian Bay Region, told delegates that the region's industrial growth was last year reflected in a 15.9 per cent increase in the peak demand for power.

Mr. Ingimundson, formerly manager of Northwestern Region, said that lines and distributing stations were being built at a rapid rate to supply the new loads. Several remotely controlled transformer stations were also planned.

Big strides were made in electric heating during the year with more than one-third of housing starts being all-electric installations. "I am pleased to say that Georgian Bay has consistently led all other regions in the percentage of new homes equipped with electric heating," he said.

Fourteen schools were installed with electric heating in 1966, bringing the regional total to 72. A further 27 were expected to open this year. New motels and motel additions were almost exclusively heated by electricity.

Mr. Ingimundson mentioned promotional programs, saying that an electric clothes dryer campaign last fall sold 1,550 dryers while a college study lamp campaign was currently under way. Six customers whose buildings were illuminated during the recent Operation Aladdin floodlighting display in Barrie had asked for permanent installations.

After hearing that a system of regional government becomes more likely each day, delegates decided to ask their provincial association to study possible economies and other advantages to be found in the integration of "certain functions of local Hydro commissions".

W. R. Tomlinson, Port Elgin, said the resolution was first passed at last year's district meeting, but the study was beyond the scope of the district. Government changes would affect the entire province and professional advice would be needed.

"We do have regional government around the corner and I am in favor of it," he said. "But we would like to know what action to take." The resolution was even more imperative now, he added, than when originally passed.

The meeting also called on Ontario Hydro to do everything in its power to alleviate what was termed "an unusually large number of power interruptions" in the Parry Sound area. Members were told of two interruptions lasting several hours.

In reply, Ontario Hydro's regional manager said



Just a few of the men who manage the province's electrical utility affairs. Their venue is the Northwestern Ontario town of Sioux Lookout.



OMEA president Dr. J. D. Fleming and Ontario Hydro Chairman George E. Gathercole with officials of OMEA district 3. Back row, left to right: Dr. Fleming; W. R. Lawler, Sioux Lookout; R. F. Stratton, Kenora; Mr. Gathercole. Front row: J. D. Phillips, Schreiber, past president; E. J. Hawthorne, Dryden, president; W. A. Ferguson, Atikokan, vice-president.



New District 9 officers, left to right, front row, are: E. C. Dash, Sudbury, 1st vice-president; D. G. Hugill, Sault Ste. Marie, president; Harold Prescott, Capreol, 2nd vice-president; Jack Chapman, Widdifield Township, 3rd vice-president. Back row: R. Marleau, Sturgeon Falls; Wes Cooke, West Ferris, secretary-treasurer; and directors W. R. Stewart, West Ferris; R. F. Eddy, Sault Ste. Marie; and C. A. Smith, Chapleau Township.

it had been a severe year for electrical storms he believed that both instances were caused b lightning. "We are as concerned as you about these interruptions," he said, adding that a second power line to the area was planned for 1969.

OMEA District 3

boom year in the northwest

Primary demand for electrical energy in North western Ontario is expected to increase more 60,000 kilowatts this year matching the rise of 1966, J. Walter Looney, Ontario Hydro region manager, said at Sioux Lookout.

He told delegates at the District 3 OMEA fall conference that demands reached a record pe 537,000 kilowatts last year — an increase of 12.6 per cent over 1965.

New industry, Mr. Looney said, was responsi for 70 per cent of the increase. He mentione Dow Chemical Company plant at the Lakehe the Steep Rock Mines iron ore pelletizing pla at Atikokan and the Griffith Mine between Ear and Red Lake, all of which opened this year

"The increase over the last two years is equa our whole region's load 20 years ago," said manager. "It is not possible to design and built that much generating capacity in two years. why we have to plan well ahead and someti appear to have more reserve than we need."

Mr. Looney pointed out that the region's hydelectric capacity was 595,000 kilowatts. To safeguard against any trouble with these stathe 100,000-kilowatt Thunder Bay coal-burn station was put on line last November. Two combustion turbo-generators are being instat the plant to provide additional reserve.

The regional manager told delegates that late 1968 an interconnection with Hydro's East S which serves the rest of Ontario, will be in service. Initially, it will be accomplished by transferring power with the Great Lakes Post Corporation, which operates in the Sault St Marie district. However, in 1969, a 230,000 line from Wawa to Port Arthur will physical connect the two systems.

"This interconnection will provide a reserve power in case of a break-down of equipmen: also provide a cushion to take care of large ! loads," he said.

Turning to dollars and cents, Mr. Looney signated that Hydro is giving a great deal of attentic treducing costs. Savings are swallowed up inflation and Hydro is fighting hard to keep to the price of electric power.

"We are constantly on the lookout for more efficient ways of doing things," he emphas a "Among these are the use of more efficient and equipment, new methods, new device such as computers and the extension of the use to a greater variety of projects."

Hydro is also taking advantage of improve highways and better communications. Mr.

ed the recent use of helicopters to transport en and equipment into isolated places. Travelling he has been drastically reduced and the need set up expensive camps diminished.

our job, as I see it, is to bring the benefits of extricity to the maximum number of people. To do is we need an adequate supply of power with exclass service, supplied at a price such that ople will want to buy more of our product."

is in itself was not enough, he said. "Our jective is only partially fulfilled unless people ow what these blessings are, and can be. It is perefore our duty to tell them, and this involves an ucational and sales program."

r. Looney pointed to the promotion of eleccally heated homes, electric water heaters and the creasing use of more appliances as ways of ceting the objective. He thought the newly nounced Electrical Modernization plan would sist marketing.

rning to commercial heating, he mentioned e 16-room high school earmarked for gas. ter much effort the local commission succeeded having the school tender for both gas and ectric heat, with the result that annual costs ere shown to be lower with electric heat. Now the mool represents a 445-kilowatt heating load than additional 100-kilowatt water heating load.

nuch ado about everything in sioux lookout...

R, EM and apologies to the Bard

oux Lookout played host to 90 delegates anding the two-day fall conference of District DMEA. Topics discussed ranged from public tions to the Electrical Modernization plan.

G. Stacey, AMEU president, brought the eting up to date on public relations activities. said the "Tell the People" program has moved ad with education sessions for both OMEA and EU members at various locations. Support been good, said Mr. Stacey, and the program go a long way toward improving the image ocal utilities.

Tther part of the Consumer Protection Act s with itinerant sellers, into which classification ractors participating in the EM plan will fall. These sellers must register under the pay a registration fee, and post a \$5,000 of Mr. Connolly said.

Shakespeare fans were treated to liberalization of his plays when five Northwesterners enacted "Much Ado About Competition". A dream sequence saw three witches torment Macbeth (a gas salesman) until he realizes the advantages of electricity. The play was climaxed with 40 school children marching on stage with cards noting various buildings in the region that were electrically heated. When reversed, the cards asked: "What are you doing about competition?"

Ontario Hydro commissioner Lt. Col. A. A. Kennedy presented a report on the Hydro Hall of Memory and the historical collection. He told delegates that the Hall of Memory, located at Sir Adam Beck-Niagara Generating Station No. 1, would never be completed in the sense that continual revision would be necessary to keep it up to date. Histories were still coming in from the utilities and were being edited. "For this reason, the library hasn't yet been installed," he said.

As far as a proposed electrical museum was concerned, things were in abeyance until next year. Col. Kennedy said that this year's CNE Century of Progress show had given pensioners working on the collection good experience in handling a show of artifacts.

Delegates passed two resolutions for consideration at the OMEA's provincial meeting next spring. The Lakehead cities of Fort William and Port Arthur were the authors of recommendations which, in essence, called for the installation of electric heating in all Ontario Housing Corporation homes.

The Fort William resolution asked Ontario Hydro to do what it could towards gaining electric heating for OHC homes — "in the interests of our citizens generally and to prevent air pollution."

James Currie, Port Arthur PUC commissioner, proposed the other resolution which referred specifically to a 300-home OHC project near Ear Falls, where a new mine is opening and a natural gas pipeline is being installed to aid the processing of ore.

Mr. Currie suggested the hydro-electric station at Ear Falls had an adequate supply of power to service the new townsite as well as the Bruce Mine itself. His resolution called for the executive of the OMEA to express to the provincial government the desire to supply electric power on a competitive basis with other forms of energy to all Ontario Housing Corporation projects.

District 9 OMEA meets in North Bay

the north is in clover

Northeastern Ontario is on the move and one of the chief factors underlying its buoyancy is electricity — just as it will be in the year 2000.

Delegates attending the joint annual meeting of District 9 OMEA and the Northeastern Region AMEU, in North Bay, were treated to some pretty fancy crystal ball work by Regional Manager A. B. Hayman who tuned in on things as he expected to find them in another 30 years or so.

Sprawling "indoor gardens" will dot the great clay belt stretching from Cochrane to Kapuskasing and Hearst, producing lettuce, cabbage, cucumbers and other vegetables in such quantity as to make the North independent of the South in such table fare. Each operation will require about 5,000 kilowatts of electric power.

Elsewhere in the Northeast, giant electric kilns will be used to cure new strains of quick-growing clover; soybeans will become a growing source of revenue and a new species of spruce will make the scene, maturing in half the time presently required.

On the industrial front, Mr. Hayman sees steel from a huge mill at Moosonee, employing Belcher Island iron ore, rolling south on the twin tracks of the electrified Ontario Northland Railway. Ocean-going vessels will call regularly at Thessalon for cargoes of metal and wood products.

And where will the great blocks of electric power needed to spark this development come from?

Cloudy at first but growing clearer in the mystic depths of the ball, the unmistakable shapes of big nuclear-electric plants at Little Current, New Liskeard and the remote shores of James Bay take shape for our Hydro soothsayer.

He's away off, you say? "Look me up in the year 2000," Mr. Hayman invited his audience. "If I don't get to your meeting that year, let me know how I made out."

Zeroing-in on the immediate future, the Northeastern manager could see an above normal growth pattern for Elliot Lake in the light of the tremendous resurgence of interest in uranium; major increase in population for the Sudbury area due to expansion in the nickel industry; economic stimulation from Hydro's decision to build a generating plant on the Montreal River; and increased competition from natural gas in the Sault Ste. Marie—north shore area where new pipelines are planned.

Summing up, Mr. Hayman noted that the region's peak demand in 1966 was 673,000 kilowatts. He estimated this would top the million kilowatt mark by 1971.

Guest speaker George E. Gathercole, chairman of Ontario Hydro, also spoke in glowing terms of the area's potential. Noting that Northeastern Ontario produces close to one-quarter of Canada's mineral wealth and a good proportion of its pulp, paper and lumber, the Chairman drew special attention to its fast-developing facilities for higher education. He said the second phase of a 10-year construction program to cost \$50 million was underway at Laurentian University of Sudbury. Federated and affiliated institutions are the University of Sudbury, Huntington University, Thornloe University, College de Hearst, Algoma College and Nipissing College, North Bay.

"The emergence of these institutions is of the greatest importance," he said, "not only engendering employment opportunities but enriching us culturally, economically and socially."

In reviewing the repercussions of the construction strike against Hydro, Mr. Gathercole said that

(continued on page 21)

Here's the ideal gift for the guy who's got everything. Cruises 135 miles an hour, broadloom on the floors, bronze-colored upholstery and trouble-free starting on the frostiest of mornings. If he wants to feel on top of the world, he can take it straight to 20,000 feet.

Of course, Ontario Hydro doesn't have everything. But it does like to get construction and survey crews around fast, which partly accounts for this turbo-jet addition to its fleet of 10 hard-working helicopters.

The pilots who'll fly her are like cats that swallowed the proverbial canary. Chief pilot Jim McKaye collected the machine from the Bell Helicopter plant at Fort Worth, Texas, and flew back with associates Ken Wallingford and Jim Boyd. "It's the second generation of helicopters and the engineering is very far advanced on anything we've ever known," he says.

Its engine, for example, weighs a mere 117 pounds and will give a quieter, smoother ride than conventional piston-engined whirlybirds. Other advantages? Well, jets have fewer moving parts than piston engines and are therefore subject to less wear and tear. This means less maintenance. In fact, all-round operational savings are expected to be considerable over a four-year period.

The new aircraft will be equipped with rubber floats, a special FM radio and a sling attached to the underside for use in lifting construction materials.

Ontario Hydro was the first electrical utility in North America to operate its own helicopter fleet. Its machines fly something like 120,000 miles a year patrolling power lines, doing aerial photography, survey work, brush-control spraying and assisting in the maintenance and construction of high-voltage lines.

Capable of flying non-stop from Toronto to Sault Ste. Marie, this latest acquisition will prove ideal for putting down passengers in the remotest location. Yet it's also the last word in flying comfort.

Remember the name. It's a Jet Ranger, Model 206A, and retails around \$135,000. After all, Christmas is just around the corner.

New Jet Ranger really is the glamor girl of the Ontario Hydro helicopter fleet, particularly when viewed beside conventional model.









hydro and

The Smith Report

The far-reaching implications for the Hydro enterprise of the Ontario Committee on Taxation report, issued September 1, are now being studied by Ontario Hydro and the Ontario Municipal Electric Association.

Prepared by a five-member committee headed by chartered accountant Lancelot J. Smith, the long-awaited report took five years to complete. Its three volumes contain some 1,300 pages and more than 350 recommendations, including a number which would directly affect Ontario Hydro and the municipal Hydro systems.

The government's position with regard to the committee's recommendations will be included in a white paper to be presented at the next session of the Legislature, after consultation with municipal representatives.

The Committee recommends a new tier of 28 regional governments across the province, including metropolitan, urbanizing and county governments.

Two key passages suggest the philosophy of the committee: "We strongly endorse as an important principle the assumption of full tax obligations by all government business enterprises in order that they may be on an identical plane with private firms." And:

"It may well be . . . that the circumstances that surrounded the creation of a public enterprise have changed. Thus instructing the enterprise to operate at cost, or a certain definition of cost, though valid initially, may be inappropriate at a later point in time."

Throughout, the report refers to "municipal revenue-earning enterprises" which it defines as commercial-type operations of some "significant proportions" undertaken by a local government body on a continuing basis. Elsewhere, the committee formally suggests that the Department of Municipal Affairs define the term "revenue-earning enterprises".

Recommendations likely to affect Hydro include:

- Provincial Crown agencies and Ontario Hydro pay full grants in lieu of both municipal and school taxes.
- Provincial agencies and Ontario Hydro be subject to local improvement levies on their properties.
- All municipal revenue-earning enterprises pay full taxes, including business taxes, and charge for all services provided by them including services supplied to parent municipalities.
- Municipal property, such as hydro installations situated in other jurisdictions, should meet all property tax liabilities.
- Subsidies or surpluses of municipal revenue-earning enterprises should require annual authorization by by-law although it notes that "difficulties may well be expected" in changing to such a system.
- Municipal councils should determine the financial policy of its municipal revenue-earning enterprises. Municipal councils "should therefore be able to determine whether or not surpluses are to be created and how such surpluses should be handled."

- The Department of Municipal Affairs undertake comprehensive studies designed to evolve precise and constructive policies to guide the operation of local revenue-earning enterprises with particular reference to the form and extent of their revenues.
- The province consider discontinuing its practice of guaranteeing the securities issued by those public enterprises whose offerings can be sold readily in the open market on acceptable terms
- Exemption of transportation services, electricity and most fuels from sales tax.
- Lands used exclusively for rail, wire and pipe lines, but not the structures on, under or over such lands, be exempt from taxation.
- Statutory rate of assessment for generating and transformer station buildings should be abandoned as inequitable.
- The Department of Municipal Affairs define "municipal revenue-earning enterprise" and require separate fund accounting of their operations whether or not they come under the immediate control of some special-purpose body.
- The Department of Municipal Affairs be assigned over-all responsibility to provide comprehensive information an all revenue-earning enterprises.
- Electricity to be an "exclusively local" function. Water supply and distribution should be shared between regions and lower-tier governments.
- Water power rentals paid by Ontario Hydro be unchanged.
 (Hydro expects to pay about \$6 million in rentals in 1967.)
- "... consideration be given to changing the Power Commission Act, together with the present practices of Hydro, so as to arrive at the cost of power in accordance with generally accepted accounting practices, and to bill the municipalities at such cost plus a profit margin not exceeding a specified percentage of cost. We think that a profit margin in the range of 5 to 10 per cent of cost would be appropriate."

The Committee said "the Commission would then show a profit from its operations which it could appropriate for debt retirement, for the reserve for rate stabilization and contingencies, or to finance expansion of its capital works as it saw fit."

"We see no reason why the applicable portion of amounts appropriated for debt retirement or to finance capital works should not be allocated to the equities of the municipalities and the rural power district in the same manner as at present."

• Government-owned business enterprises be subject to income taxes under the Ontario Corporations Tax Act. The report states that "Hydro in all probability would have no taxable income."

The committee indicated support for a recommendation by the Select Committee on the Municipal Act that members of non-elected local boards and commissions overseeing revenue-earning enterprises be subjected to recall by municipal councils.

he north is in clover

continued from page 17)

power reserves were thinner than we would to to see them." He also expressed concern the present inflationary pressures which he said the present inflationary pressures which he said the present inflationary pressures outstripping to be partly caused by wage increases outstripping oduction gains.

colutions endorsed at the District 9 meeting cluded a request for changes in legislation overning Hydro administration in municipalities financial difficulties taken over by the Departent of Municipal Affairs. The resolution sugneted that Ontario Hydro was better qualified an the Department to supervise Hydro affairs in unicipalities so affected.

e question of offering land development ancing as a means of promotion took the form a resolution by Sudbury Hydro. It requested stario Hydro to take any necessary action to spower the electrical utilities to participate in s kind of promotion, as practised by competitive ergy sources, wherever it might be deemed cessary to compete in the home heating field.

ult Ste. Marie initiated a resolution calling upon parent OMEA to request new legislation with iew to having the electrical utilities classified as sential services — thus making available pulsory arbitration for the settlement of labor atract disputes."

blic relations was also to the fore at the North meeting as it has been throughout the OMEA rict circuit this fall. Reporting for the local committee, E. C. Dash, Sudbury, said that personally, was warming up to the program he doubted if the public could be persuaded out down and read a book on the history of the could be persuaded of the public could be persuaded out down and read a book on the history of the could be persuaded with the public could be persuaded out the public could be persuaded out the public could be persuaded with the public could be persuaded with

Dash teamed up with John Darby, Espanola, J. Hugill, Sault Ste. Marie and W. E. Edwards, bury, in a skit to illustrate how a utility ruld and should not react to an increase in located from the cost of power.

the negative side, one utility lambasted ario Hydro for its audacity and told the local s how it would fight the provincial commis-



Two veteran Hydro commissioners chat during District 9 meeting. Ernie Holden, left, is from Kapuskasing and Bill Stewart from West Ferris.

sion to the last mill. The all-star cast then portrayed a more enlightened approach in seeking out the positive factors in a rate increase situation. They ended up convincing the community of the real bargain electricity continues to be in Ontario.

Another feature of the District 9 gathering was an open discussion on means of preventing vandalism and problems associated with Hydro's program of supplying appliances to the home economics departments of high schools.

Street light and insulator damage inflicted by children and irresponsible persons with rocks, air rifles and fire arms was acknowledged to be a major cost item on most utility balance sheets and one most difficult to reduce. Some delegates felt that the threat of prosecution was no deterrent and that charges should be pressed whenever the opportunity arose.

Ontario Hydro's approach to the problem was outlined by Bill Caesar, public relations officer, Northeastern Region. He said it was centered on the school and involved posters, films, talks and other appeals to common sense. He said that displays of broken insulators and other damage were effective in peaking interest and that "hero" badges bearing the words "I help your Hydro to protect insulators" had helped quell one expensive outbreak of vandalism.

Agreed that the school appliance program was sound and effective, delegates expressed some concern with a lack of communications among all facets concerned and between the manufacturer and dealer, in particular. North Bay Hydro manager B. M. Graham thought that the percentage of cost now being borne by the utilities (15%) was not exorbitant but he hoped it would not be increased.

Espanola's John Darby felt that some dealers found it difficult to grasp the intent of the plan—to influence future homemakers in favor of the electrical way of doing things. Some utilities reported difficulty in disposing of the appliances after use by the schools while others found it no problem.

Sole recipient of the OMEA's long service award in recognition of 15 years of service was H. Bruce McCubbin, North Bay, the retiring district president. In making the award, D. P. Cliff, 1st vice-chairman of Ontario Hydro, said Mr. McCubbin "exemplified the ideals of public service in an area of vital importance to the municipal welfare."

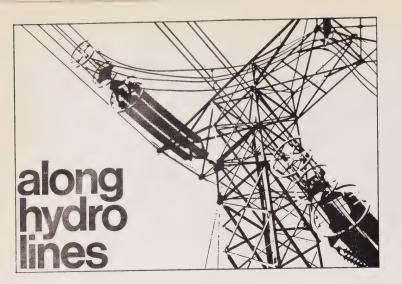
Mr. McCubbin has served as chairman of North Bay Hydro eight times and one of the local substations has been named in his honor. His father, the late N. J. McCubbin, was one of the original North Bay Hydro commissioners, in 1941.

eved his boss

to k thinking by lineman John Pym saved his o's life after he accidentally touched a 40-volt line. Kincardine PUC superintendent lod Kellestine was knocked unconscious by 16-hock. Mr. Pym got to him within seconds nibegan resuscitation while another lineman and a doctor. Mr. Kellestine, whose injuries coded burns, three fractured vertebrae and 15-jf memory, is now back at work.

men are shown at the Georgian Bay lucipal Electric Association's annual meeting, he Mr. Pym (left) received a meritorious award from the Electrical Utilities Safety





Cool memories

Although opened last February, work is still continuing on the Hydro Hall of Memory at Niagara Falls. One of the biggest jobs is the installation of air conditioning, necessitated by the high-intensity lighting on displays and because the displays themselves have reduced the natural circulation of air in the foyer of the old Sir Adam Beck power station

Other improvements will include the establishment of a library to contain histories of the 350-odd municipal electrical systems across the province and to provide a reading room. It is expected that histories will continue to flow in for the next two or three years.

A brochure has been printed which explains the background leading to the creation of the Hall of Memory and describes the displays

The Hall of Memory is the joint Centennial project of the OMEA, AMEU and Ontario Hydro. Latest figures show that more than 73,000 people have visited the display since it opened.

Five-storey robot

Erection of a gargantuan coal-handler weighing 550 tons and standing five storeys high will start soon at Ontario Hydro's Lambton power station, near Sarnia. Designed by the Krupp works, in West Germany, the \$1 million-plus stacker-reclaimer will unload coal at a maximum rate of 3,000 tons an hour from ships docking at the power station. It will also reclaim coal from the pile and feed it by a system of conveyor belts to the station's bunkers.

The machine will be the largest fully automatic unit of its kind in North America. A computer will make such decisions as when and where the huge digger will start to cut, which coal bunkers to



This giant has a TV eye

fill and at what rate the machine will work. The operation w scanned by closed-circuit television and monitored in the tion's computer room.

As it works, the machine will creep 800 feet along a 28 gauge railway. It will be powered by more than 20 ele

motors and several electrical thrusting devices.

Although Krupp is designing and building some of the Canadian General Electric will supply all electric motors, cand automatic controls while other Canadian companies were sponsible for the steel framework and actual construction

Lambton will cost \$220 million and is due to deliver first p next year.

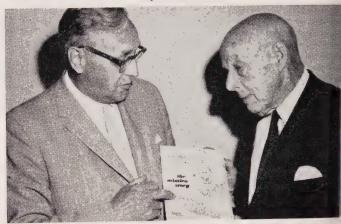
Jubilee bonus

Ontario Hydro News has received a top award in indujournalism for its jubilee issue published July-August last

Editor Don Wright received the "special project" award annual conference of the Canadian Industrial Editors' Assition at Mont Gabriel, Quebec. More than 100 entries received from across Canada. Marks were given for cowriting and graphics.

Ontario Hydro's employee publication Hydroscope, edite Joan Evashuk, also received the top award in its class. CIEA represents the editors of 400 industrial newspapers magazines.

First and last mayors meet



Memories of Mimico

Even though he's just celebrated his 90th birthday, John Harrison still gets up at 7.00 a.m. But then he's never been let the grass grow under his feet. He was the first ma Mimico in 1917 and he brought Hydro to that community in

Now living in Westport, 40 miles north of Kingsto Harrison recalls the days of coal-oil lamps when there was one house on Mimico Avenue and when Lake Shore Bow was a sea of mud. He is the last surviving member of the Stars, the first Mimico lacrosse team.

Before becoming mayor, Mr. Harrison served as trustee the community was a police village and as councillor and when it was raised to the status of village. Now the to Mimico has been absorbed into the new borough of Etobio

Seen looking over a history of Mimico with Mr. Harris party celebrating his 90 years is the town's last mayor Griggs.

Brighter than Broadway

Dazzled by the bright lights of Broadway? Then stay aw Lower Brant Street, Burlington.

In lighting lingo, new sodium vapor lights down that the fare supply nine footcandles of light at the road surfac

ared with a paltry five footcandles on New York's Broadway.

ne best-lighted street in North America — Chicago's State

treet — has an illumination of 14 footcandles.

Brant Street is the first main artery in Canada to use this latest pe of installation, although the lights have been in extensive se at Expo '67. Burlington's Mayor Lloyd Berryman, PUC chairan Kenneth L. Morris and Winston Howell, chairman of the rant Street Businessmen's Association, switched on the new phts.

letermen to gather

Ith value to delegates the main consideration, organizers of the oth annual Metermen's Workshop of the AMEU aren't changing system of proven merit. To be held November 16 and 17 at the cyline Hotel in Toronto, the workshop again features presentators aimed at keeping the metermen up to date, and provides enty of opportunity for questions and the exchange of ideas.

A Thursday morning meeting will have a panel fielding quesons under the general heading "What's Your Beef?" Manucturers, Ontario Hydro's electrical inspection department and e Department of Trade and Commerce will also be heard.

John Dawson, of Dunnville, will report on an international setting on measuring instruments, and there'll be a tour of vdro's Central Meter Shop and the W. P. Dobson Research boratory. AMEU president A. G. Stacey will give the keynote dress.

MEA honeymoon



bridegroom keeps convention date

Mayor A. A. Brockman, chairman of Rainy River PUC, it was than just a district 3, OMEA meeting at Sioux Lookout month — it was part of a honeymoon.

orn in Seattle, Washington, Mrs. Brockman hadn't seen sh of Northwestern Ontario, so the couple decided to combine annual meeting with sightseeing. When they registered in its Lookout they had been married just one week.

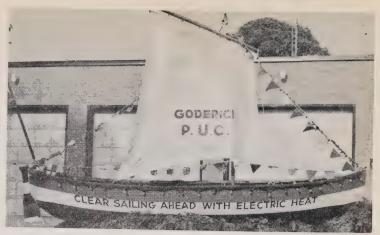
layor Brockman, a retired railroad engineer, met his wife on a trip to California when she took the seat he had been occurg. He has been chairman of the PUC since 1960, but will quish his office to move to the United States.

ne of the first to congratulate the bridegroom was W. B. lie (left), commissioner with Fort Frances PUC.

chors aweigh

It kind of float would you have for a parade in a town borderson Lake Huron and where half the citizens are boatniks?

The natural answer sailed right into the minds of Goderich staff when they participated in the Centennial parade. atled in red, white and blue and carrying the original "Clear



Pride of the comfort fleet

sailing ahead with electric heating" slogan, the float was a definite asset to the fleet.

D. A. Rolston, PUC manager, reports that the effort was well received by onlookers, particularly with the gunwales and rigging sporting colored lights.

World's highest voltage line

Twin 600-mile lines will transmit hydro-electric power from Manitoba Hydro's Kettle Rapids power site on the Nelson River to Winnipeg at 900,000 volts. The DC project—the world's highest-voltage transmission system—will cost an estimated \$170 million.

In July, the Federal Government signed an agreement with Manitoba under which the government will construct and own the transmission lines. Atomic Energy of Canada Limited is responsible for construction. Power transmission is expected to start in 1971.

The project is part of the first phase in the development of the Nelson River's power potential, which exceeds 5,000,000 kilowatts. Manitoba Hydro has started construction at Kettle Rapids to provide an initial 1,000,000 kilowatts.

Total cost of phase one, including transmission facilities, will exceed \$400 million.

Red Cross guests

Ontario Hydro played host recently to 400 teenage Red Cross delegates from Canada and 45 other countries. The occasion was the visit to Niagara Falls of Rendezvous 67, Centennial project of the Canadian Red Cross Society.

The youngsters arrived in a 10-bus cavalcade and spent a day seeing the falls and the hydro-electric power stations at Queenston. It was the final phase of their tour, which began with a



Rendezvous at the falls

week-long international seminar at Ottawa's Carleton University and included visits to Expo 67, the St. Lawrence Seaway, Upper Canada Village and Fort Henry. The 90 overseas visitors had previously spent two weeks with families across Canada.

Shown at the falls are Susan White, Quebec; Darlyne Matsumoto, United States; Marieta Maaba, Philippines; Amal Sharfi, Sudan Republic; Julee Lintick, Manitoba.

municipal briefs

Guelph Hydro joined forces with Local 548 of the International Brotherhood of Electrical Workers to build a float for the city's Labour Day parade. The float, which promoted electrical modernization, won an honorable mention.

Forty-three members of the Electric League of Peterborough last month toured the site of Pickering nuclear power station, just east of Toronto. The visit was organized by Peterborough Utilities Commission.

Charles Austin, 98, a former mayor and a Chatham Hydro commissioner for 12 years, has died. He was the city's mayor in 1910 and then turned to the electrical field in the early days of public power in Ontario. Chatham's first department store was founded by Mr. Austin.

Oshawa is close to batting 1,000 in electrically heated homes. Edward F. Armstrong, chairman of Oshawa PUC, reports 850 dwellings enjoying this form of heating and a further 150 under construction or planned.

With a flip of the switch by Chairman Robert Leslie, Leamington PUC put its second substation into service. The station serves the north side of town and complements a similar one built in 1960 on the south side. Mr. Leslie said at the ceremony that the utility has enjoyed an average annual demand growth of 7.9 per cent over the last nine years. He congratulated the PUC crew which did most of the construction work on the \$45,000 station. Richmond Hill Hydro has a home of its own. A \$25,000 purchase has been made of a two-storey brick building on Yonge Street. The building covers 4,500 square feet and replaces basement office space rented from the town. Electric heating and air conditioning will be installed in the new offices.

Scarborough PUC has a new supervisor of Customer Relations and Sales. He is 39-year-old John W. Daniel. It's a new staff position for Mr. Daniel, who joined the PUC about a year ago. Mr. Daniel joined Ontario Hydro in 1950 and worked in various locations throughout the province including North Bay, Barrie and Belleville. He spent four years with Oakville PUC before going to Scarborough.

The village of Ayr is switching from a Hydro system administered by a committee of council to an elected PUC. The local council recently passed a by-law creating the commission to relieve themselves of administering the Hydro system.

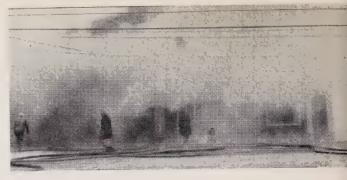
Elections will be held this year for two commission posts. The reeve will fill the other seat.

George R. Nightingale has joined the staff of Port Arthur PUC as electrical engineer. He is a 1958 honors graduate from the University of British Columbia. Before joining the PUC he worked for Canadian Allis Chalmers and the Canadian Chromalox Company.

Leamington PUC has dusted off plans for a new office building originally conceived in 1959. The proposed \$100,000 building would be situated close to its four-year-old service centre on land acquired last year. Construction could start in late 1968.

Toronto Township Hydro commissioners will be elected to three-year terms in December. The longer stint of office was approved by the local council for itself as well as the Board of Education and Hydro.

Kemptville Hydro scores a strike



Before . . .



. . . and after

Gleaming new Hydro offices have been fashioned fro assortment of buildings up and down the province, but pe none has a stranger past than Kemptville Hydro's new offic service building. It was once a 10-lane bowling alley.

Not that you'd recognize it now. Nor when the trim, s storey structure was officially opened last month would as have guessed that fire had raged through the place only years ago.

Guest speaker at the opening ceremonies was A. M. Ped manager of Ontario Hydro's Eastern Region. Mr. Pederscalled the history of electric power in Kemptville, saying dated back to 1888 when a temporary generating plant was to provide electric light during the annual agricultural fai community joined the family of Hydro municipalities in 1!

"Kemptville is considered one of the pioneers in the exposition of the provincial power system," Mr. Pederson said. Ment present achievements, he said that the town now had 35 trically heated homes. Seventeen more were ready for contant these represented 100 per cent of new home starts this

Shown outside the offices are R. A. Henderson, cha W. M. Johnston, commissioner; Mayor R. Raina and ma secretary W. J. Chopowick.

August energy production

Primary energy provided by Ontario Hydro in Aug totalled 3.96 billion kilowatt-hours, an increase of 6.6 cent over the same month a year ago.

For the first 8 months of 1967, the total is 33.51 bil kilowatt-hours, up 7.1 per cent over the same period year. Adjusted for seasonal influences, primary endemand in August was 4.32 billion kilowatt-hours, per cent more than the previous month.

The seasonally adjusted total for August repres 51.80 billion kilowatt-hours at annual rates. This is 37 per cent of the energy demand in 1949.



t's an ill wind that blows no good and it would be committing an injustice to suggest that the trikes which crippled Hydro and other construction projects across the province this summer lave been totally without their benefits.

Robins, for example, have had a heck of a good ear. Power shovels and other immobile pieces of heavy construction equipment make dandy esting places and the nooks and corners in usting steel beams are a great place to raise ellow-crested rivet hoppers.

Less obvious benefits of the tools-down hilosophy include improved breeding grounds or the various species of moths in the empty vallets of the workers; improved marital relaons brought about by the lack of pay cheques ver which to squabble; and an encouraging ecrease in the number of lost-time accidents, rievance procedures and wildcat walkouts.

These are just a few of the good things we an see accruing from widespread strike activities. Pessimists, of course, are bound to ferret at a disadvantage or two. The professional ckle-puss will point to the perils of inflation at suggest that it's brought about, in part, by g fat wage increases won through strike-essure and without regard for production creases.

So what's the matter with having a lot of oney around? People who can't hear music whispering fields of greenbacks or find rmony in the bell-like tones of silver dropping on the rooftops can always retire or take up rsing or find some other shelter against the bney monsoon blowing so merrily across the id.

And the gloomy ones are sure to haul out that chestnut about inflation pricing our goods out foreign markets. Great — we'll use 'em ourselves. Anything wrong with colored TV in every pm? Oh, we might find ourselves a little extracted with wheat and the like but we can always eat our way out of problems like this. We do get into difficulties, there's always a sign general or two standing by to assist, can think of one very well equipped to sniff any soft spots in the economy.

Vhy shouldn't a plumber make more money

than the prime minister? He's got a dirtier job and nine times out of ten is required to provide his own overalls. And a fat lot of good the prime minister can do us when our squat friend in the bathroom commences those ominous rumbles presaging the likelihood of floods.

Speaking of floods, and without deliberately attempting to change the subject as labor and babies are pretty closely related, it was interesting to learn how the birth rate boomed in Venice just nine months after the devastating deluge of last November. Flooding is blamed for a 45 per cent increase in births and the sociologists, never ones to hang back when there's a sex angle to explore, put the Italian phenomenon down to "a defiance by human nature to adversity."

Harking back to this column of last September, we find the sociologists were then explaining away the big boom in blackout babies with this noncommittal phrase: "The lights went out and people were left to interact with each other."

Of the two groups, the power baby sociologist came closer to calling a spade a spade. Both appear to have begged the obvious explanation—there just wasn't anything else to do.

Even in far off Malaysia they hesitate to suggest that sex is something to think about only in the absence of TV or some other more titillating diversion. The educational minister recently told welfare officials how research in a local village had revealed a steep drop in the birth rate with the coming of electricity. But he drew no conclusions other than to observe: "You know the reasons and I need not elaborate further."

Perhaps not, but we wish he had. If there is a direct relationship between electricity and the birth rate, it seems to warrant further investigation. If kilowatts can help keep things under control in some of the developing nations, a few power plants would be a small price to pay.

And at home the electrical people may be missing out on a good promotional gimmick. "Forget the pill and live better electrically" might prove effective. Or a reverse twist could be employed for taking swipes at the competition. "Living with gas is pregnant with peril" should rock them a bit, as might the suggestion: "If you're cooking with gas, you may be swelling with more than pride."

In any event, it's a natural field for a bit of sociological snooping. A thesis on Ed Sullivanism and its influence on the sexual shenanigans of the space age should be good for a Ph.D. at any man's university with enough good stuff left over for a pocket book on *Sex and the Three Wire Service*.

■ Before leaving the subject of sex entirely, something we try to avoid as long as possible, it might be in order to direct a word of sympathy towards our worried doctors. According to recent reports, the profession is concerned about the number of heart attacks affecting middle-agers during . . . ah, well, . . . at moments of intense passion. The physicians don't know what to advise and we can understand their dilemma.

A firm order to cease and desist is likely to do more harm than good — quite aside from the fact that it's likely to be ignored. Yet half-way measures are difficult to envision.

Obviously, though, it's a question of mind over

matter and it might help at these times if we could learn to concentrate on extraneous subjects, such as a simple mathematical problem or a flock of sheep grazing beside a tranquil pool. Eating a banana or learning to play a light musical instrument with one hand are other suggestions the profession might ponder.

Fatalists, of course, will take their chances on the theory that there are worse ways to die.

Electricity and the law have been in the news on a couple of recent occasions and with all due respect to the legal beagles involved, the arguments on behalf of their clients have been something less than Aristotelian. In Toronto, for instance, a young lady was caught red, ah . . . handed donning a pair of shoplifted panties and all her attorney could plead was that she often wore two pairs in very cold weather.

Understandably skeptical, the magistrate fined her \$50 with the suggestion that she buy herself an electric blanket.

Sage advice indeed, except that the heat control and cord might bulge a bit under a miniskirt.

Another unfortunate devil went to the hoosegow for six months for doing a little wiring as the result of which he managed to live better electrically without benefit of meter. The attorney for the defence topped his impassioned plea for clemency with the following gem: "This man works hard. He's not a deadbeat. He does some very interesting things which are illegal."

Hear, hear — but we doubt very much if the degree of interest generated by an illicit act constitutes a valid defence. Jack the Ripper, for example, managed to capture the public ear but his press clippings wouldn't have helped much had he been hauled before a jury of his peers.

Literary bloopers are always a delight to recount when they happen to somebody else and this one was drawn to our attention by "Water and Pollution Control." They found it in a newspaper.

"The city parks committee . . . were given full power to act as they see fit on Nickel Beach this year."

Unfortunately, the news reached us too late, but we'll be down that way next summer.





Trent emphasizes the individual
 Kenora joins the family
 Maize on the move
 Ontario hydro news

november 1967





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PERTUDICALS DEPT UN

Ontario hydrocal news

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the cover

Among the latest products of the academic explosion, Peterborough's Trent University combines ancient architectural concepts with all-electric comfort to arrive at an ideal environment for learning. The emphasis is on the individual and lectures take second place to five- or six-student tutorials such as the one depicted on our cover. Further details commence on page 12.

editorial board

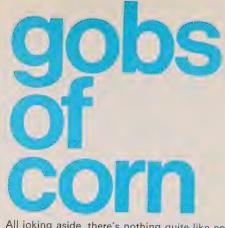
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You should have seen the one that got away. Kenora fi stories are unique insomuch as they don't have to stretch t truth in describing the finny population of Lake of the Woo-Still, the 25-foot maskinonge leaping out of the flower beds McLeod Park is a bit out-sized even for the Northwest. One Kenora's Centennial projects, it's just one of the items of inter associated with old Rat Portage. Kenora is welcomed to Hydro family on page four.



All joking aside, there's nothing quite like corn.

We're referring, of course, to the outdoor type capable of standing ear to eye, lyrically speaking, with the elephant. The other kind is strictly for laughs.

Right now the growing variety is having a field day.

In Ontario, not only has the number of acres planted almost tripled since 1959 (over 1,300,000 as opposed to 478,000) but the yield per acre is also on the rise. Thirty years ago farmers were garnering an average of 38 bushels an acre. It jumped to 60 in 1952 and is now over 80 bushels.

And corn is being grown in areas of Ontario that until a few years ago were considered marginal because of the climate. As an example, cornfields at the Ontario Department of Agriculture's experimental station near Kemptville, in the Rideau Valley, are producing 117 bushels an acre. This is comparable to the yield in the high-producing Chatham area.

What's behind the new rustle in the cornfield? No fabulous new market has opened up for the golden kernel. More corn is being used in established markets such as the distillery, food processing and vegetable oil industries, but it doesn't account for the sprouting production.

"Actually it's the farmer himself who's responsible for the corn surge," says Ken Fallis, an official with the Ontario Department of Agriculture.

"Farmers have found it an excellent livestock feed. It has a high carbohydrate content, which is translated into more pounds on cattle, hogs and sheep. And it's a better fuel for the milk producers on dairy farms."

Corn, or maize as the North American Indian called it, also gives a better output per acre. In some instances it is almost double that of other grains, like oats. But it's not a magic formula for feeding all livestock and has to be supplemented with other feed to give the animals a balanced diet.

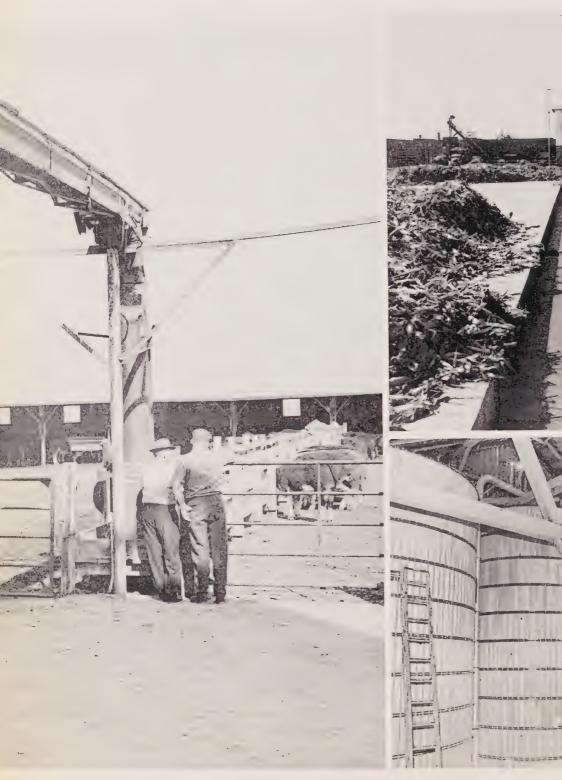
Electricity plays a part in the drying and storing of corn. In most cases the dryers, although gas or oil fired, rely on electricity to power their auxiliary equipment. And it's the power behind those long augers that carry the grain in and out of

As with other crops, the harvesting of corn is a mechanical one. Massive picker-shellers devour four rows at once, and long, electrically-powered augers hoist the kernels to the top of the grain dryer.





Corn feed is moved from aerated storage bins to the livestock automatically. At Green Giant of Canada, Windsor, sweet corn for canning is handled by the ton. In the field, a plastic model used in research is compared to a real corn plant and the moisture content of feed corn is determined by passing a current through a measured quantity.



Ontario is expanding its corn belt and harvesting more per acre

tesy Ontario Department of Agriculture





the dryers, between storage bins and to the feed trough. Fans are liberally employed to aerate stored corn to keep moisture levels down and avoid "mold."

One of corn's big advantages is relative mobility, which lends itself to automated handling. In many instances it's never touched by hand from harvesting to consumption. It also has decided advantages for storage - just compare the size of a bale of hay with a bushel of corn.

Although most people connect corn with the North American continent, the word itself goes back to earlier times. Then, it denoted grains of all kinds from oats to wheat or barley. The British still use the word in this sense. Columbus gave Europe its first look at corn. He reported seeing Haitian cornfields 18 miles long. But the discovery didn't titillate Spanish palates and corn waited for English-speaking colonists of a later era to begin developing it into the multi-billion dollar crop of today.

It's generally accepted that there are five types of corn - flour, dent, pop, sweet and flint - each with its advantages or disadvantages. Again these can be lumped into two categories - the sweet corn that we eat on the cob or from the can, and grain corn. A percentage of the latter is also eaten, but only after refining into such foodstuffs as corn starch, corn syrup, corn oil, corn flakes or just plain popcorn.

Where do corn and its derivatives turn up?

Anywhere. Some of the constituents of this magazine once stood basking in a farmer's field, for cornstarch is an important paper-making ingredient. The mold that produces penicillin wouldn't grow without corn; nor would ball bearings have such shiny, unscratched surfaces were they not polished with ground corn cobs. The list is almost endless. So is the list of things that agriculturalists are doing to the plant.

Dr. W. Stan Young, an agronomist with the University of Guelph, points out why "thigh" may replace "eye" in the popular lyric from "Oklahoma" about the elephant.

"Corn companies are developing plants which would expend less energy in growing long stalks and leaves and devote their strength to producing better ears," he explains. "These plants will probably be three to six feet high compared to today's eight- to 10-foot variety.'

Right now the cream of the corn hybrids is one which is planted early, matures early and stands six to 10 inches shorter than its late-maturing cousins. Corn is also being planted closer

together. The old standard 40-inch rows are now reduced to 30 inches, and may soon go to 20 inches. Two things have made this possible, the advent of new chemical weed control systems, which dispense with spacings wide enough for horse-drawn cultivators, and the development of corns which need less growing room.

In experimentation, electricity is also playing its part. At the university, underground electric heating cable has been interspersed with rows of seedlings to keep the ground temperature warm enough to promote greater plant development. It brings home an earlier crop, but the cost for a large-scale operation is high. In similar experiments, it was found that corn could survive several frosts, produce a good yield and still be ready for harvesting early.

"One thing we know for sure is that it's better to seed early and have the plants frozen then, than to delay planting and harvest corn frosted before maturing," says the husky agriculturalist.

One plot of corn at Guelph leaves many visitors shaking their heads. It stays green no matter what time of the year and never grows taller. It isn't the real thing at all, but a series of cleverly constructed plastic models.

"We're applying engineering principles to arrive at the best possible strain of corn," says Dr. Young. "These models are helping us find exactly what we want."

The experimenters check with electronic gear such factors as the amount and density of sunlight at varying distance between plants of different sizes, shapes and spacings. By adjusting and modifying the plastic models they eventually hope to find out what the ideal plant looks like.

Corn is also making possible what's called complete cycle farming. An example is a 40,000bird poultry farm near Guelph. Manure from the birds is used to fertilize the corn; the corn is harvested to feed the birds. The cycle can be repeated indefinitely, about the only outside need being seed corn, some fertilizer, and weed killer. A seeder, developed in co-operation with the university, permits planting without plowing. The new corn crop grows through the decaying roots and stalks of the preceding year's crop.

It all seems like a corny Utopia. Corn and man have been linked for centuries, but it will feed man only as long as he plants it. Corn, as we now know it, is one of the few plants that can't seed itself. If man suddenly disappeared from the face of the earth, corn wouldn't be long in following.

This fledgling member of the Hydro family was formerly known as Rat Portage

Kenora, Ontario, or Kenora, Manitoba?

That was the question before the turn of the century. And just to confuse the issue, the town was incorporated in both provinces about the same time under the name Rat Portage.

Odd as it may sound, it's only one of many curious happenings in the history of the settlement, which dates back to 1688 when the first white man arrived. Across the northern tip of Lake of the Woods, on which Kenora stands, and down the centuries there has passed a colorful cavalcade of Indians, priests, fur traders, railroad builders and gold seekers.

Things are still happening in the town of 12,000 with the name that sounds Indian, but isn't. It's among the youngest members of the Hydro family of municipalities, for instance, having joined in May of this year.

The community's biggest taxpayer—the Ontario-Minnesota Pulp and Paper Company—previously supplied it with electric power.

Electricity has played a big and stormy part in the lives of Kenora's citizens. It all started back in 1895, ten years before Rat Portage was changed to Kenora by an Order in Council. Citizens chose the KE from Keewatin, a sister town, the NO from Norman, now the town's western suburb, and the RA from the old Rat Portage.

Ratepayers of the day were asked to approve debentures of up to \$60,000 for "the construction of water works therein". Two private bids for a power franchise were also before the council so the battle between public ownership and private enter-

prise was on. The principle of public power did win out, but it was a costly victory.

Before the dust of power house construction had settled, Kenora found it didn't have legal title to water rights in the area. After years of expensive litigation, the town finally secured the rights at a cost of more than \$500,000 — the original estimate was \$95,000 — with the right to develop water power limited to less than one-third of what had been sought.

Nor were things quiet on other fronts. In 1900, local Indians staged the last "up-rising". It was however, little more than a "scare". One powerful chief got a message from the Great Manitou which told of the imminent destruction of the white man. Thousands of Indians around the Lake of the Woods gathered on Big Island to sit out the disaster. But settlers, seeing flotillas of canoes, interpreted it as a general uprising.

Troops were alerted and supplies of ammunition and guns distributed. Families from outlying areas hurried into Rat Portage. After weeks of sitting around, a well-armed party sailed out to Big Island to meet the natives. The group was a bit befuddled by the friendly reception it received until the Indians explained the prediction and that the time for the disaster had passed.

After a period of relaxation, the Indians returned to their homes. As evidence of their peaceful intentions a white flag was carried in the bow of every cance on the journey back.

About the same time mining, which had flourished in the area with all the aura of a gold boom during the 1890s, settled back into a slow but steady endeavor. The boom saw over 30 mines in operation with names like Black Jack, Bad Mine, Queen of Sheba and Dead Broke—all calculated to put adventure into a man's heart. But the call of the Yukon and Alaska was stronger. Tales of "ounces"

to the pan" far overshadowed the "few speck gold to the ton" in the Kenora area. However, thousands of claims staked around Kenora did simpetus to other industries as well as aid mininilater decades. Mining still plays a big part toda the district's economy, but is now centred 200 morth of Kenora and a similar distance to the e

In the north, rich discoveries around Red La Pickle Crow, Trout Lake and Stanley Lake prominent, and extensive hydro-electric devel ments have placed economical electric powe the service of the mines.

The Canadian Pacific Railway, which we through Kenora in the 1880s, fostered the groof the lumbering industry. Demands for timbe the railroad, not only for ties but for bridges trestles, were heavy. In those days, the Kenora was rich in timber — white pine, spruce tamarac abounded. On Tunnel Island, on the viside of town, the district's first sawmill cut see 2.000,000 feet of timber.

Although the forest industry still plays a more in the life of the town, lumber no longer is main product. Now it's newsprint — made pulp wood — that forms the bulk of product The vast Ontario-Minnesota Company mi Kenora produces more than 700 tons of news a day.

It was back in the 1920s that Kenora solo municipal power plant to what is now the popular company. In the process, two birds of the day killed with one stone.

The sale relieved the town of the burden of 14-year-old plant at a price equal to the outstart debentures. It also dispensed with the liability agreement with the Maple Leaf Milling Compathat the town had signed under the mistaker that it had excess power to sell.

Turning over the power plant was an induce



History and industry are entwined across the face of Kenora. The log-carpeted lake laps at the edge of a park where the original fur trading post stood. Elsewhere, fallen comrades are honored outside the court house and pulp wood pyramids await transformation into newsprint for the world. Sheet-metal maskinonge adorning park is typical, they claim, of local catches.









to the company to construct a paper mill in the town at a time when Kenora needed industrial expansion. The company also agreed to provide power to the town for municipal and domestic purposes. For its part, the town agreed to help the company obtain timber rights in the English River area and rights to generate power at White Dog Rapids. A railway charter into the English River would also be jointly pursued.

Ambitious as the idea of the railroad was, it never materialized. Nor did the company make use of the power rights it obtained. Today, pulp logs are transferred to the mill as they have been for many decades. Huge log booms, stretching over several acres of water, are still pulled and pushed around by a tug in the bay at Kenora. The "water road" is still one of the fastest and most economical modes of moving timber.

And modern generating stations are located at the White Dog Rapids site and on the English River – built in the 1950s by Ontario Hydro. The White Dog and Caribou Falls plants, deep in the wilderness, are controlled from a transformer and switching station at Kenora.

Sports historians have noted the name of Kenora many times in the chronicles of champions. First prominence in the sporting world came two years before the turn of the century when a team from Rat Portage captured the international lacrosse championship from the "unbeatable" Winnipeg Victorias, only to lose it minutes later over the eligibility of two players.

About the same time, another name cropped up in the record books — Jake Gaudaur. He was the toast of the rowing world for many years as champion singles oarsman and holder of the diamond sculls. Mr. Gaudaur did much to build the Kenora Rowing Club, which is still prominent on the waterfront. Modern-day sports fans will more readily

remember his son of the same name, whose wizardry on the gridiron and in the front office have helped make Hamilton Tiger-Cats a power in Canadian football.

The town also lays claim to the honor of being the only small town to have its name inscribed on the Stanley Cup. That was the Thistles, back in 1907. Two local players of the era, Tommy Phillips and Sy Griffis, are members of the Hockey Hall of Fame. Such players as Babe Pratt, Charlie Rayner and Bill Juzda have called Kenora home in other years.

It's also famous as the jumping-off place for some of the finest fishing and big game hunting in the province. Light planes moored at the town wharf take off every few minutes loaded with American sportsmen bound for well-appointed lodges located on the myriad of lakes within a few minutes' flying time.

Over the years the town and the surrounding area have prospered. Employment has been good and industry has steadily expanded. In 1965, the area's gross payroll was over \$26 million, giving an average family income of \$5,321 a year – among the highest in the province.

Prosperity brought problems. Kenora grew, demands for electric power rose. For a time a shortage of power curtailed the use of water heaters and street lighting, but an agreement with Manitoba enabled the town to take surplus power from the station at nearby Seven Sisters Falls. Subsequently, the paper company began buying power from Ontario Hydro for both its own use and for resale to the town.

With a look to the future, when a more adequate power supply would be essential, the council held a referendum in 1958 asking that the agreement with the Ontario-Minnesota Company be dropped and one entered into with Ontario Hydro. The

question of change was defeated by 648 verto 509.

However, the same question was put to voter 1965 and was approved by 1,046 votes to 9 putting the town on the road to becoming Hydro municipality.

Today, Kenora has a Hydro commission consing of R. F. Stratton, chairman, Mayor E. L. Ca and W. D. Leydier. Under their guidance the tow electrical system is being rebuilt to meet presed day needs.

Jack McCoombs, who handles the enginee side of the new utility along with the town-ow telephone system, estimates it will be three to years before all the distribution system is revam on a pay-as-you-go basis.

The utility's 4,700 customers are located not on Kenora but also in Keewatin, three miles to west. And there's a sprinkling of what are terr "transient" customers — people from the Winniarea with summer cottages around the lake.

Industries in the town range from the Onta Minnesota, with its 1,200 employees, to processing, the building of fibreglass boats, processing and the Canadian Pacific Rails which uses the town as a division point.

Economically things are better this year for th bands of Indians in the district. The wild rice c which is reserved for the Indian to harvest, bumper one. With the retail price of the wild close to \$7 a pound, the Indians in the area have an income approaching half a million dol Just as on the Prairies after a record wheat c new cars and pick-up trucks are beginning appear on the reservations.

And what of the town's future?

It's best summed up by Commissioner Leydier who says: "There's still lots of work t done. But there's a lot of potential here in Kena



Around old "Rat Portage" our photographer captures Main Street glistening under a sprinkle of rain; Hydro Chairman Roy Stratton and Commissioner Wilf Leydier conferring on the sidewalk; float-equipped aircraft, as common as taxi cabs, at the town wharf; and Beaver Brae Secondary School which graces the northern edge of town.









seaway sisters help raise steam

Meet five big sisters who spend their lives humping coal. Although from different families, they're all a bit broad in the beam. But who wouldn't be with a job like that? Two of the ply eastern waters with cargo from the mines of Nova Scotia. The others pick up supplies of West Virginian and Pennsylvanian coal from Conneaut, Ohio. Their main task is to keep Ontal Hydro's coal fires burning. Deliveries are made at power plants in Toronto, Windsor and Lakehead. And soon boats will start docking at the \$220 million Lambton power station, now under construction on the St. Clair River. As you might guess, sisters this size can sure look after themselves. They need no help to unload and they and other coal boats carry a five million tons between April and December. But life afloat has its drawbacks. The weather









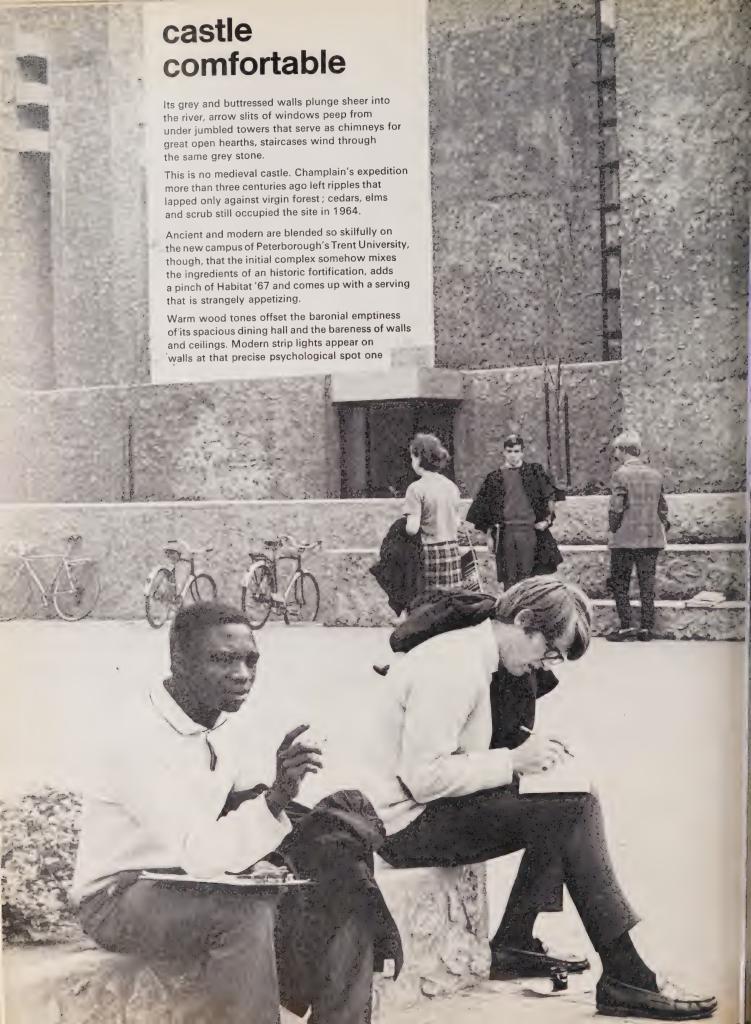
does little for the complexion and easing that huge waistline into the figure-hugging locks of the Welland Canal can be a traumatic experience, particularly in front of a bunch of spectators.

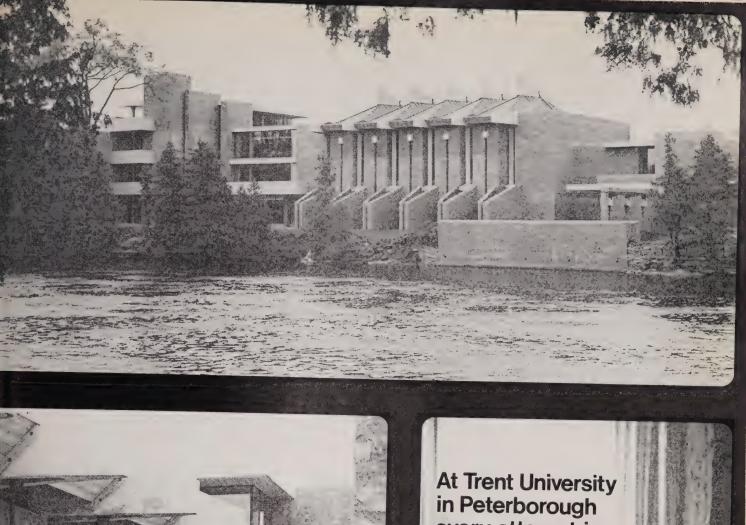
Coal plays an important part in the Ontario energy scene. Power needs have outstripped the province's hydro-electric resources, now being supplemented with coal plants and base-load nuclear power stations. Coal plants are most suitable to meet the day-to-day fluctuations in demand.

Ontario Hydro buys most of its coal from the United States, but utilizes considerable Nova Scotia coal — a new \$35 million five-year contract with Canada's Dominion Coal Company has just been announced.

The power business is big business. Its economic ripples wash against the manufacturing, mining, utility and shipbuilding industries and several of these giant carriers were designed specifically to handle coal for Ontario Hydro.

As for names, we've pictured the Cape Breton Miner, the Ontario Power, the Canadian Century, the Tarantau and the Roy A. Jodrey. As for dates, forget it. They're strictly career girls.







At Trent University in Peterborough every attempt is made to avoid the academic sausage machine









centre photo courtesy
Electrical News and Engineering



Kitchens, dining hall, lounges and at the heart of it all the master control for Trent's electrical systems. Above: another form of master control is the university's 38-year-old president, Thomas Symons.

expects to find a flickering torch.

The creation of a comfortable electrically heated castle is far from being a twentieth-century educational gimmick since it embraces the very philosophy of the four-year-old university. "Trent believes in treating the student as an individual," says one official. "This is reflected in the architecture, which gives a feeling of security without being overpowering. No building is more than four storeys high."

Every attempt is made to avoid the academic sausage machine. Champlain College — first structure completed on the new Nassau campus — combines lecture rooms and student accommodation in each of its three buildings. Students live in rooms that are clustered together in fours or fives and it is necessary to climb stairs or cross courtyards to gain access to other groups.

No attempt is made to assemble students of similar interests. A first-year undergraduate taking a general arts course may well find himself next door to a fourth-year science student or even one of the university faculty. Members of both teaching and administrative staffs are charged with helping groups of new students with problems of adjustment and other personal difficulties.

Teaching methods carry the emphasis on individualism still further. Seminars are restricted to about 15 students; tutorials to five or six.

This means that Trent must employ one facu member for every nine students compared wi one-to-twelve average across the province.

All this costs money. Twelve years ago a universal could hire a fully fledged Ph.D. for around \$7,000 a year. Today, with an ever-increasing number of institutions vying for qualified teachers—three new universities have opened in Ontario year—a starting salary above \$10,000 is more likely.

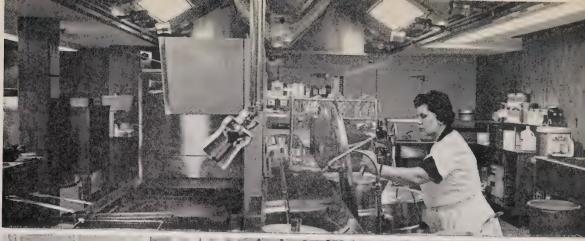
Heading Trent's progressive policy is Professor Thomas H. B. Symons, at 38 the youngest universident in Canada. Professor Symons was educated at the University of Toronto and late at Oxford University, which he attended on a Massey Fellowship. He also studied independing Paris, Rome and Leyden.

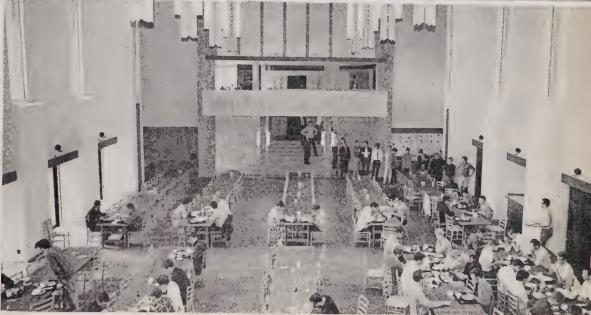
A boyish-looking historian with a penchant of detective fiction, he was appointed presiden frent in 1961 and has been responsible for the planning and administration of the university its inception.

"The philosophy which inspires Trent is base upon the conviction that education is, inescally an individual experience," he says. "It is individue each student, to each teacher and to ever scholar who may come to it."

In its approach to education, Trent is drawing the experience of the great universities of and North America. It is significant that Tree







dy incorporated about 90 of the 98 recomlations of the recent Macpherson Report indergraduate instruction at the University of into. Among other changes, a nine-man U of T mittee headed by political scientist C. B. otherson suggested scrapping two-thirds of ctures in favor of tutorials, the downgrading of inations and the promotion of staff on the of teaching ability rather than degrees.

esent, more than 200 students live on the campus, which covers more than two square and is divided by the historic Otonabee, part of the Trent Canal system. The ning 600 or so undergraduates either live roccupy university quarters in Peterborough's stown area. These include several converted xpanded homes which make up Trent's all two colleges — Catharine Parr Traill ge for women and Peter Robinson College en students. A former public school — Rubidge Hall — serves as the university's rand administration centre as well as ling some classroom and research space.

shuttle students daily between the older ngs and the new campus. College authorities out that the downtown property is urally sound and should provide valuable and teaching accommodation for many years.

olumped for the all-electric concept early initial planning and thus became one of

the first universities in Canada to be heated entirely by electricity. A decentralized system of electrically heated boilers distributes hot water for the radiators. These are supplemented by electric baseboard heaters in some remote locations. Water for domestic purposes is also heated electrically.

The architects investigated other forms of heating, but decided on electricity for economic as well as aesthetic reasons. Similar heating can be easily installed in future buildings without the need for the expensive underground ductwork of a centralized system.

Trent is supplied by Peterborough Utilities
Commission and features underground distribution
of services from the point that 44,000-volt
cables cross the site's southern boundary.
A fully enclosed substation in Champlain
College transforms the power down to 13,800
volts. The 44,000-volt system was built by the
PUC, which will continue to operate and maintain it.

Methods of load control should give attractive operating costs. Hot water systems store heat, allowing power to be diverted automatically to such loads as cooking and lighting at busy periods. Even so, the campus will eventually have a peak consumption almost as large as the present peak demand of nearby Lindsay.

Built at a cost of nearly \$4,800,000, Champlain College will be followed by a women's college, a

chemistry building and the first phase of its main library. Two pedestrian bridges will span the Otonabee to permit ease of travel between buildings on either side of the river. One bridge is being built as part of Trent's initial development program, due to be completed by the end of next year. Long-range building plans call for an expenditure of more than \$70 million by 1980, when a student enrollment around 4,000 is expected.

In four short years, this embryo seat of learning has gone far. Trent's anthropology department has gained considerable repute, inspired no doubt by the historical importance of the Trent waterway and nearby rock carvings believed to be more than 3,000 years old. An extensive building program and the influx of students and teachers is also having an impact on the local scene.

"One thing Trent has done for Peterborough and that is jack up the prices of old homes," says a resident, but some of the changes are more subtle. Lectures, art shows, poetry readings, visits by choirs and concert artists... such are the benefits that accrue to a university centre. Added to these is the injection of dozens of university professors and staff into the cultural life of the community. Peterborough — the city that like Rome is built on seven hills — is beginning to reap the benefits of its foresight in wooing a centre of higher learning.

are we losing our sheep?

Sheep were among the earliest animals domesticated. They bleated and grazed their way over rough pasture land 5,000 years before Christ and may even pre-date man himself.

Across the centuries they have been labelled innocent and foolish, stupid and pure. They are raised in vast Antipodean flocks and on countless smallholdings. They crop the coarse moorland grass in the British Isles and they sailed to the New World with Columbus. They have fed and clothed man from time immemorial.

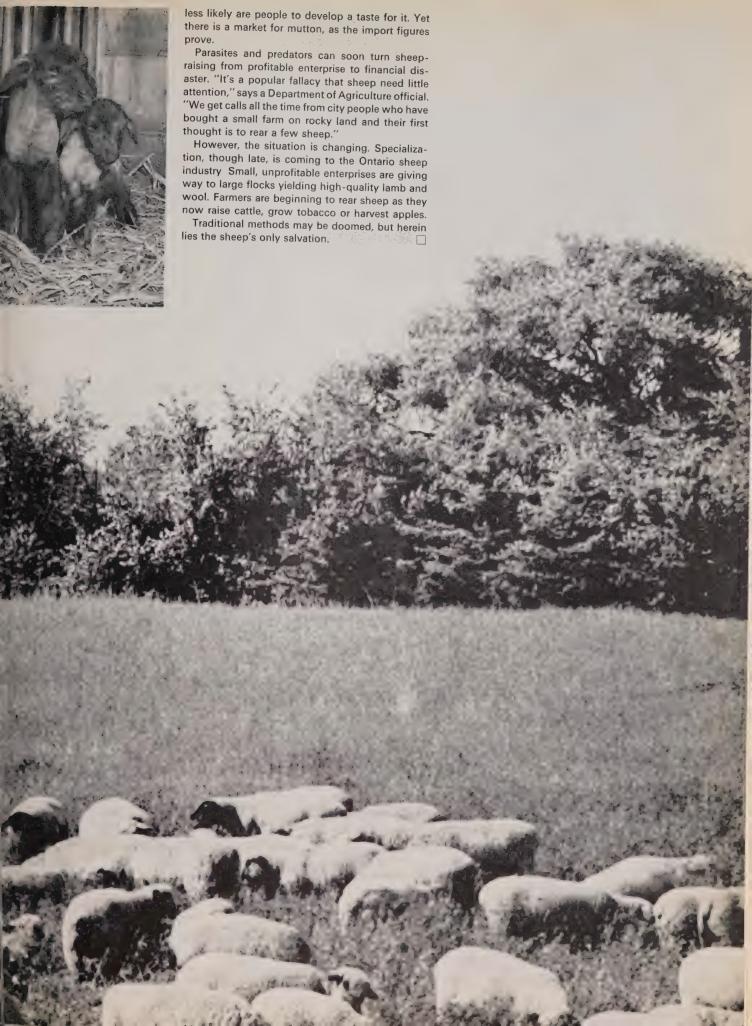
Yet the sheep has gradually disappeared from the Ontario scene. Numbers have dwindled from more than one million at the turn of the century to a mere

259,000 this summer. And this despite tempora uplifts in the woolly population during two work wars.

Experts point to several contributing factors. Note least is the mechanization of the modern, automated and electrified farm. Farmers have torn down fences and enlarged their fields for the wide power propelled machinery that replaced narrow horse drawn equipment. Fences are necessary for sheet control. When they went, so did the sheep.

There's also the question of palate. Canadian like lamb even less on a plate than they do on the farm. The average person consumes about for pounds of mutton and lamb a year out of an annutotal of nearly 180 pounds of meat. It's a vicious circle—the less lamb there is on the market, the





spinning a shaggy dog yarn



With 13 ewes grazing on the 20 acres behind Aylmer home, part-time farmer Carman Brocould provide plenty of work for his wife's spinn wheel. Yet the only material the couple ever specame from a shaggy samoyed dog.

Mrs. Brown has found the doggy wool ic for knitting into sweaters, stoles and mittens. simply a matter of running a comb through family pet twice a year, washing and carding material and spinning it on the traditional wh Not to be confused with the dog's hair, the mate comes from a thick undercoat that is shed clouds of white fluff each spring and fall.

"It gives the samoyed terrific protection age the cold," says Mr. Brown, an Ontario Hydro I man. At one time the Browns kept three samoy Now they just have the one.

The dogs take their name from the Samoy a Mongolian people living on the bleak Sibe tundra around the White Sea. The tribesmen in clothes out of the fur and use the dogs for variety of purposes from drawing sledger hunting and rounding up herds of reindeer.

Down through the centuries, the samoyed lived in arctic isolation. Neither fox nor appears in the strain. In fact, he's nearer the pitive dog than any other breed. His courage endurance make him ideal for polar exploration to hamsen, Scott and Sharton to name but a few.

Hair is thought to be a development of v. Certain animals are covered with hair only, of with both hair and wool and some varietic? sheep just with wool. Other woolly crea include the angora goat and rabbit, the mus in and the llama.

When Mrs. Brown first decided to take spinning as a pastime, she had difficulty fir to both a wheel and a teacher. Her first strug attempts were on a wheel borrowed first museum at Grand Bend. She had an aftern tuition from a Bowmanville woman, but it many hours of trial and error to become profit

"Spinning is an art which used to be prain every Canadian home," she says. "I should to see it disappear altogether."

on the municipal front

District meetings of the Ontario Municipal Electric Association continue across the province. Highlights from the recent gatherings at Goderich and Peterborough are reported here together with those of the accounting conference in Toronto. Topics ranged from computers to air pollution and from PR to power costing.

Shakespearian city holds the stage

omea talks dollars and cents

Power costs, street lighting, sales promotion and load building all came under the scrutiny of more than 100 members at the Ontario Municipal Electric Association's district 6 meeting at Goderich.

Delegates from Stratford PUC figured prominently in the discussions and were responsible for originating two of the three resolutions put before the conference.

The first Stratford resolution was a five-part proposal which in principle asked that local utilities be given more say in establishing the cost of power at wholesale and retail levels. It suggested:

- * Reconstitution of the Power Costing Committee with representatives from the AMEU as full members.
- * That no increase in the wholesale power cost charged by Ontario Hydro to a commission be effective until the general increase for that year is approved by the power costing body and also until Ontario Hydro and the utility involved agree on any increase.
- * That Ontario Hydro should not charge an increased wholesale rate until both it and the local

commission have studied the wholesale and retail rates for power, and that the increases at both levels become effective simultaneously. Alternatively, each local utility should be authorized to set its own retail rates without any prior approval from Ontario Hydro.

- * That the actual cost of power in any one year be established by a committee made up of representatives from Ontario Hydro and the Power Costing Committee.
- * That the 13th power bill be without interest until actually presented to the local utility and then be issued on a 30-day net basis.
- R. E. Mountain, of Stratford, said his commission felt that a fairer and more equitable method of assessing power costs could be established if the principle of partnership between Ontario Hydro and the local commissions was practised to a larger degree.

Under the present system, he said, the increased wholesale rate goes into effect January 1. But it takes four to five months of negotiating before the retail rate reflecting this can be put into operation. In the interim, the local utility is functioning with only a small surplus. And if an increase in wholesale rates follows the next year the utility might operate at a deficit until another retail rate becomes effective.

The other Festival City resolution asked that Ontario Hydro remove the requirement for establishing depreciation reserves for street lighting from its accounting regulations. (continued)





New District 6 officers include, front row: A. McGugan, Palmerston, 2nd vice-president; G. R. Cook, Preston, 1st vice-president; G. D. Sills, Seaforth, president; G. A. Shepherd, Elora, past president. Back row: M. Fisher, Galt; C. Lippardt, Harriston; H. M. Scheifele, Waterloo, D. M. Seath, Stratford, secretary-treasurer; W. J. Mills, Goderich; W. J. Isaac, Mitchell; R. E. Mountain, Stratford and J. McMichael, Listowel.

Chatting between sessions at OMEA Goderich meeting are: George Shepherd, Elora; Archie McGugan, Palmerston; Ed Noakes, OMEA secretary-manager; and Dr. J. D. Fleming, OMEA president. Mr. McGugan, along with E. B. Weber, Kitchener, and Leslie Bowman, New Hamburg, received awards for long service.

Stratford commissioner D. R. Larkworthy told delegates that the billing from utilities to a municipality is in four parts — capital charges, depreciation, energy and operation and maintenance. However, depreciation charges have the effect that the municipality is not only paying for the present plant (through capital charges) but also for future replacement since the utility assumes the obligation of replacing worn out or obsolete lighting equipment from the reserve for street lighting depreciation.

"This method of financing is not in line with established practice of municipal financing where debentures are issued for capital expenditures regardless of whether this is for the addition or replacement of assets. Thus councils often object to the depreciation charges," he said.

Mr. Larkworthy added that the present two per cent rate of depreciation is generally considered inadequate in view of the useful life of equipment. It is possible that the asset could be written off before it is fully depreciated.

As an alternative, he suggested that street lighting be turned over to the municipality. This would make capital expenditures part of the corporation's total debentures rather than a utility debenture.

A further proposal from the executive asked that copies of resolutions to be put before the provincial conference of the OMEA in Toronto be mailed to every commissioner in District 6 before the

convention, and that this procedure be considered for other districts. This would give commissioners time to consider the resolutions.

Earlier, delegates received a report on load building from M. Fisher, chairman of Galt PUC, which showed that on a percentage basis utilities in smaller centres are keeping pace with the larger ones in new all-electric homes, conversions and water-heater installations. It was noted that both Listowel's public schools are all-electric.

The meeting decided to study the feasibility of a sales promotion competition among the 34 utilities in the district. First step will be a survey of the methods employed to promote the use of electricity.

a digital dilemma

To computerize or not to computerize . . . that was one of the big questions at Toronto as 250 Hydro delegates attended the 35th Western Ontario accounting and office administration conference of the Association of Municipal Electrical Utilities.

A panel discussion entitled "Utilities and Data Processing" literally teed off on a humorous note. Panel members Bud Moore, Oshawa, Don Black, Waterloo, and Al Luciano, Niagara Falls, appeared in golfing garb and supposedly left for the

course as a talking computer took over custor billing. They returned on a more serious note and a lively exchange of questions and answ ensued

Their utilities represent the existing approach data processing. Oshawa PUC, although the largest of the three, has no data processing a billing is strictly a mechanical operation. Wat PUC makes use of computer facilities at Gue Hydro while Niagara Falls Hydro sends its bi to a commercial data processing centre.

Such items as information retrieval, final noti customer acceptance, capital costs and staff reaction were discussed. The session ended Mr. Moore pointing out that data processing ultimately affect every utility, regardless of si

About costs, he said that "in 1950, when electronic computers first came into general 100,000 computations cost \$1.38. Today, w computers in their third generation, the cost \$ dropped to 3½ cents and is getting lower."

R. A. McElwain, from the personnel division the Canadian Imperial Bank of Commerce, addressed the conference on personnel and personnel administration. He said there wa 0 clear-cut formula for dealing with people. "Manage them the way they actually do beha the way you'd like them to behave."

Every manager should take a good look at periodically, at least every six months, said





Don Black, Waterloo, right, makes a point as he discusses the AMEU accounting conference program with Bud Moore, Oshawa; Bob Ion, Brantford, chairman; AI Luciano, Niagara Falls; and Bill Coltart, Chatham.

Rapt attention was the order as 250 delegates attended sessions of the Western Ontario Accounting and Office administration conference. It was the first time the conference was held in Toronto and it drew the largest-ever number of delegates.

Elwain. If employees weren't performing y they should, then the manager should nuch self-critical as critical of his workers.

tes also heard presentations from N. R. pole, of Ontario Hydro, who dealt with power pand Hugh Feenstra, Stratford PUC, who about general purpose rates.

0 million fight clean air

Hydro is spending more than \$30 million pat air pollution, Hydro chairman George E. cole told delegates at the AMEU's ting conference. The new equipment is establed at thermal power stations both ce and under construction.

edly, Ontario Hydro contributes to air 1," Mr. Gathercole said. "There is no way h the large quantities of coal that Hydro as can be burned without discharging purities into the air.

vould be unfortunate to leave the on that if Ontario Hydro would only wn its thermal power plants, the air problem would quickly blow away."

ercole said a study by the Air Pollution Division of Metropolitan Toronto noted that one-third of air contamination came from combustion and fuel-burning equipment, one-third from automobiles, buses and trucks and one-third from industrial plants, including power stations.

He said there were two main pollutants from thermal power stations — fly ash and sulphur dioxide. "Throughout the world immense research programs have been undertaken to control these emissions, and substantial success has been obtained in abating discharges of fly ash. As new techniques and equipment have become available, Ontario Hydro has installed them."

Control of sulphur dioxide posed a difficult problem for industry. "Despite intensive research in the United States, Britain, Japan, Germany and other countries, a satisfactory, practicable method of controlling SO₂ emissions has not yet been developed."

Expressing confidence that a solution would ultimately be found, Mr. Gathercole said that Hydro has established various practices to render such emissions harmless. Thermal stations in Toronto were situated so that prevailing winds blew pollutants over Lake Ontario about 75 per cent of the time. Tall chimneys achieved effective dispersion and heights were being steadily increased. In addition, the coal used at all thermal plants had the lowest sulphur content available on a long-term contract basis.

Toronto's Richard L. Hearn plant was not as modern and efficient as more recent developments

and would be operated on a diminishing scale as new sources of power became available.

"Hydro does not ask for immunity from generally accepted and applied community standards," Mr. Gathercole added. "We accept our responsibilities to the community in full, but by the same token neither should we be singled out simply because our plants happen to be highly visible.

"At least one misconception I know of brings up a good deal of criticism undeservedly. Often, during the winter, our stacks give off large, white clouds of steam, which is mistaken for smoke. This, too, is entered against our record."

District 1 of the OMEA meets in Peterborough

ringing the pr bell

At the annual conference of District 1, OMEA, in Peterborough last month, J. R. Philips, of Brockville PUC, literally sounded a large bell to drive home the main point of his talk, "Ring the bell and tell the people".

Urging fellow commissioners to further public relations efforts, Mr. Philips suggested that PR stood for *performance* and *reporting*. "Both are indispensable," he said. "Excellent performance is





Policymakers pose for an after-election picture at the Eastern Ontario Municipal Electric Association meeting. The new executive, front: 2nd vice-president George Bender, Hawkesbury; 1st vice-president C. Baker, Trenton; president, R. K. Elliott, Deep River; past president H. F. Baldwin, Oshawa. Back: G. Nourse, Picton; W. L. Andrews, Cobourg; A. J. Bowker, Gloucester; L. L. Coulter, Ottawa. W. A. Taylor, Peterborough, was absent.

Long-service awards were presented at the EOMEA meeting by J. G. Baldwin, Lindsay, second from right. With him are Hydro veterans E. F. Armstrong, Oshawa; G. A. Scott, Westport; Dr. R. H. Hay, Kingston; L. L. Coulter, Ottawa.

not enough in itself — it must be reported, made known to the public. Of course, reporting to the public is useless if performance is not first class."

Mr. Philips said that a commission's public relations activities were concerned with three groups — employees, public officials of the community and the public at large.

"An employee who is both satisfied with his job and proud of his organization is an active force in the building of PR attitudes," he said.

Public officials must understand how Hydro functioned and how it was planning for the future. They must also be convinced of the competent and efficient day-to-day running of the utility. As for the third group, their confidence was necessary to the success of a public relations program.

"Silent service, no matter how good, is not enough," he added. "We must tell our story to the people and we must keep at it constantly. It is amazing how quickly people forget."

Ian McRae, Ontario Hydro commissioner, also carried the PR ball to underscore the necessity of greater efforts to "Tell the Hydro story to the people". He said an informed public must be the prime objective in each community.

"Although Hydro in Ontario is big, don't act like it," Mr. McRae said. "Keep talking man to man to your customers. The continued viability of the

Hydro concept — power at cost — depends entirely on you and your passing this awareness on to your people."

Ontario Hydro Chairman George E. Gathercole addressed the delegates at the wind-up luncheon, commenting that construction strikes have delayed plans to introduce more than one million kilowatts of generating capacity in 1967.

"The consequences have been grievous," Mr. Gathercole said. "Power reserves have diminished, but we do expect to meet all our requirements."

Other topics at the conference included an outline of present problems in labor relations presented by F. A. Barley, personnel director of the City of St. Catharines, and a panel discussion on underground distribution charges. "Conflict or Confidence", a melodrama acted out by R. Cawker, Whitby; E. F. Armstrong, Oshawa; and W. L. Andrews, Cobourg, demonstrated how and how not to handle a PR program in regard to an increase in electrical rates.

Delegates resolved to ask their provincial association to seek legislation that would permit utilities to place existing overhead wires underground as they saw fit and to require customers to pay for such changes on their own land. The proposal came from Peterborough Utilities Commission, which pointed out that while most customers were served by overhead systems, there was a general demand for underground distribution.

Nepean Hydro originated a resolution requesting that in the case of amendments to marketing or

advertising agreements with Ontario Hydro, original agreement should apply until the participating utility had signified its acceptal otherwise of the agreement. Were the new conditions not acceptable, the utility should have the opportunity of opting out of the ol agreement without penalty.

This resolution was also forwarded to the property association along with a proposal from Trein PUC to object to Department of Transport conference of the property.

During the two-day conference, two bus-lc ^a of delegates and their wives drove to see th all-electric Trent University, now under con struction on the city's outskirts.



st in a decade

ed fees for the inspection of electrical wiring and equipment tario will go into effect January 1.

th Bellamy, Ontario Hydro's chief electrical inspector, said ncreased rates would only offset mounting costs of the ctive service. Hydro last increased fees in 1958. To streamhe new rates schedule, application-for-inspection fees will ncelled.

e early announcement will enable contractors and others to the revised fees into account when estimating work for the year. Books outlining the fees can be obtained from Ontario o in Toronto or from any inspection office around the nee.

ctrical showpiece

ara Falls can claim the first major town housing project in da built to the electrical industry's Gold Medallion standards. Village North development consists of 73 two-storeys, 49 with three bedrooms and 24 with two bedrooms unit contains a basement with space for a recreation room aundry equipment. Kitchens, dining and living rooms and athrooms are located on the ground floors; bedrooms and athrooms are upstairs.

ntral electric furnaces equipped with humidity control proneating and air conditioning. Water is heated by 50-gallon ic heaters in the basements.

o installed are automatic ranges with hoods and fans, erators with large freezer compartments, garbage disposal clothes dryers and outdoor receptacles for connecting up cues and other electrical appliances.

Hydro

Heart, Hands and Health! These have formed the symbol of H clubs of Canada for over 50 years. Some 70,000 young is attend regular meetings or take part in special projects year under the 4-H banner.

branch of the 4-H movement is that of the Farm and Home c Clubs, in which Ontario Hydro personnel participate as stors. More than 850 members have graduated from s provided by these clubs since their formation in 1961. cal is the Owen Sound district club, which has 21 mem-cluding one girl. Since it was formed early this year, are have learned not only about electricity and how it can be don't he farm, they have also received instruction in all respiration. It hasn't been all work and no play, since

both a trip to Niagara Falls and a corn roast have been included. The club also entered the Owen Sound fall fair as part of Ontario Hydro's exhibit. Entitled "Highline Hazard," the club's contribution illustrated the dangers of high voltage and the accidents that can happen through carelessness.

Exit, dishpan hands

Dishwashers are expected to show the highest rate of sales growth in the next four years, according to the Canadian Electrical Manufacturers Association. Estimated dishwasher sales of 60,000 units this year should more than double to 125,000 units by 1971.

The forecast also shows a rise in the sale of refrigerators, food freezers, stoves, air conditioners and laundry equipment. In 1971, refrigerator sales should be 500,000 units compared to this year's estimated 400,000. Rapid growth in food freezer sales to a total of 320,000 four years from now, eclipses today's estimated 220,000 units.

Electric stove sales should jump from 305,000 units in 1967 to 403,000 units in 1971. Sales of air conditioners are expected to move from this year's 60,000 to a 1971 level of 75,000. Automatic laundry appliances should reach 337,000 units within four years compared to 230,000 this year.

New director







Harry Hustler

Arnold Huddleston has been appointed director of Ontario Hydro's Property Division. He will succeed Harry Hustler, who is taking an early retirement to enter private practice. Mr. Huddleston, who joined Hydro in 1928, worked in the Construction Division until 1940 when he moved to Property. He has been deputy director of that division since 1956.

In nearly 35 years with Hydro, Mr. Hustler has been prominent in the sensitive business of land acquisition. Among the most demanding of his career were the complicated negotiations connected with the Robert H. Saunders-St. Lawrence hydroelectric project.

Pinpointing progress

Niagara Mohawk Power Corporation has opened an information centre depicting nuclear-electric power and the role electricity has played in the history of Upstate New York. Six miles northeast of Oswego, N.Y., the centre is next door to the company's Nine Mile Point nuclear power station on the shore of Lake Ontario. The building features a theatre, model room and fission room.

A curved-screen presentation in the theatre forms the beginning of a three-part tour. Visitors then move to the model room

where a scale model of a nuclear station can be examined. The final stage is the starlit fission room where people stand in the centre of a huge atom while a simulated chain-reaction is set in motion. Also a part of the centre are a classroom, a conference room, a lounge and picnic area.

Mounting toll

Lockage charges on the Welland Ship Canal will increase by 400 per cent over the next four years, Stuart Armour, president of the Great Lakes Waterways Development Association, pointed out last month.

He said: "The cost of using this all-Canadian facility, which was completely toll-free from its opening in 1932 to 1959, and again from 1962 to 1967, will escalate by \$20 per lock each year (over the 1967 charge of \$160) until, in 1971, it will cost a loaded vessel \$800 for each transit."

Ontario Hydro was singled out by Mr. Armour as one of the principal victims of the escalation while bringing coal from the United States to power stations on Lake Ontario. More than \$400,000 will be added to Hydro's coal transportation costs by 1971.

Mr. Armour, addressing a Rotarian meeting in Toronto, said he could not understand why the federal government discriminated against Ontario by making Lake Ontario the only one of the Great Lakes not completely toll-free.

Pity the poor alewife

A report by the United States Department of the Interior urges a costly attack on the infestation of Lake Michigan and other lakes by a small, land-locked relative of the herring called the alewife.

U.S. Interior Secretary Stewart Udall recommends that the joint Canada-U.S. Great Lakes Fisheries Commission take an active role in eliminating the fish. His report also urges that the campaign against the parasitic sea lamprey be continued. A marked recovery in the lake trout population has already resulted from the campaign in Lake Superior.

And not a drop to drink



Bottom's up on the Madawaska

For a few days early this fall the Madawaska River looked as if someone had thrown in a giant sponge as water dropped 25 feet below its normal level between Stewartville generating station and Calabogie. But it was all in the interest of getting more hydro-electric power out of the river.

Two generating units are being added at Stewartville to boost the station's capacity to 153,000 kilowatts. It was necessary to lower the water to eliminate seepage at the base of the main dam. The river bed was last exposed prior to the filling of Stewartville's headpond in 1948.

Parks man honored



He's a former Hydro vice-chairman

George H. Challies, the man who was largely responsible for creation and development of the St. Lawrence parks system Upper Canada Village, was honored recently at Crysler F Battlefield Park where a plaque was unveiled in his honor.

Past and present members of the Ontario legislature, Ont Hydro and the St. Lawrence Parks Commission attended ceremony. Mr. Challies, a former vice-chairman of Ontario Hyand one-time chairman of the St. Lawrence Parks Commiss is seen delivering his speech of thanks. With him are Mr. Ferr Guindon, left, present chairman of the parks commission, Minister of Tourism and Information, James Auld.

municipal briefs

Lorne Waddell, a commissioner of Lindsay Hydro for 18 yedied last month. He was a past president of District 1, ON and tributes were paid to him at the association's meeting a days after his death. Mr. Waddell operated a local coal, wood building supply firm for nearly 40 years and was considence of the town's pioneer businessmen. Earlier this year he ticipated in the opening of Lindsay Hydro's new office service building.

There's a new chapter of the National Warm Air and Air Cottoning Association in Peterborough. Over 90 members attement the first meeting of the East Central Ontario Regional Corporation. As a member, Peterborough Utilities Commission and its offices available for meetings.

Street lights in Lindsay will soon have a new owner. A the council committee has recommended that the corpor purchase the lighting system from Lindsay Hydro and e 39-year agreement. Hydro manager Jack Lightbody says change would involve the town more directly in planning light in accordance with street development.

Come December and Dundas PUC commissioners will be election to three-year terms. The town council recently enacted a by a providing for triennial elections for itself, school trustees utilities commissioners. A 1966 amendment to the Mun Act authorizes the longer terms.

Voters in Mitchell will decide December 4 whether the nu of PUC commissioners should go up from three to five.

Visitors to the public washrooms in Mitchell will soon be treated to all the comforts of a kilowatt. Town council has voted to it electric heating units there.

Safety was justly rewarded in North Bay when Hydro cor hi

ners hosted employees with more than four years of accidente work. Hard hat decals, denoting the number of safe working ars, were presented by Manager B. M. Graham. Archie chon, a line foreman, headed the list with a 38-year record. are's gold in those piles of scrap—at least in Windsor. The lities Commission recently garnered \$7,500 from the sale by der of used cable, wire, hardware and other odds and ends.

rou're a builder in Kitchener, it pays to install electric heat. e local PUC recently approved a 25 per cent discount for astruction firms using electric heat during the building of mes, apartments, and commercial buildings.

ales promotion personnel will administer the discount system, ich will apply for up to one year after the start of construction a home or until it is occupied. Apartment buildings under astruction will receive the discount up to a maximum of 5,000 watt-hours per suite, or until occupancy. For commercial dings it will apply up to a maximum of five kilowatt-hours square foot, or until occupied.

body getting into hot water in Kitchener can almost be tain it has been heated electrically. A survey by the PUC there ws 86.47 per cent of the city's homes use electric water ters — tops among Western Ontario communities.

elph Hydro has appointed Joseph Arlen as superintendent engineering and sales. He succeeds the late E. W. Dunlap. everton Hydro will soon have a new \$12,000 office building. one-storey building will be of cement block with stucco and the facing. Heating? Electric, of course.

W MPP

nur Meen, District 4 president of the OMEA, won a seat in the vincial legislature during the recent election. He represents home riding of York East as a Progressive Conservative. A sen's Counsel, Mr. Meen has been active in the OMEA for the en years he has been a commissioner with North York Hydro. Is at present chairman of the OMEA's government legislation mittee.

e battle is being lost



is running out on the tree doctors

letropolitan Toronto, at least, dutch elm disease appears to vinning out and hazardous rotting trees remain with a val bill of \$2 million.

the City of Toronto alone, Parks Commission crews are cted to remove 2,000 dead elm trees this winter. Parks missioner Ivan Forrest says that losses have doubled each This gives the city's remaining 38,000 elms less than five of life.

the boroughs of Etobicoke and York it's the same story. coke's chief arborist hopes for calm weather before his

department can fell more than 400 dead trees. The trunks are sturdy, but large branches are liable to crash down in 40 or 50 mph winds and cause property damage or injury. When they fall, they frequently take hydro wires with them.

Officials estimate that about 12 per cent of the 80,000 elm trees in Metro are dead or dying from the fungus disease.

Underground plans



Electricity for the test-tube set

Toronto Township Hydro is designing an extension to the underground distribution system serving Sheridan Park, the research community on the western edge of the township. The extension will serve phase two of the development.

Discussing the plans at the site are Elmer Wright, Hydro chairman; E. G. Fleming, Sheridan Park Association; B. D. Fleming, Hydro manager and R. D. Kennedy, the Hydro vice-chairman.

A week of goals

Next year's National Electric Week will be held from February 11 to 17. The theme will be "Electricity Powers Progress". Objectives will be to gain wider recognition of electricity's contribution to progress, boost co-operation within the industry, attract youth to electrical careers and build up business.

Scrubbing the atom

Whoever heard of a laundry that wasn't interested in whiter than white or colors that sparkle? Yet one of the most efficient laundries in Ontario just couldn't care less.

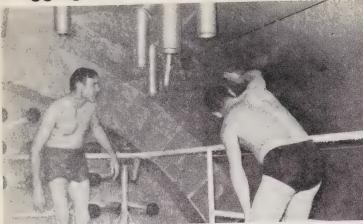
It's located at the Chalk River Nuclear Laboratories of Atomic Energy of Canada Ltd. and its main job is to remove radio-activity that may be contaminating protective clothing worn there. In a normal month it cleans about 1,000 lab coats, 7,000 coveralls, 1,500 shirts and pants, 9,000 pairs of socks, 15,000 bath towels and 1,500 trouser belts.

Only clothing from "active" areas such as the reactors and laboratories are processed in the plant laundry. Clothing from "clean" areas such as the hospital, cafeteria, stores and shops is sent to a commercial laundry.

On arrival, radioactive clothing is monitored and items with different levels of contamination selected for different treatment. Low-level clothing is washed in a fully automatic system that would be the envy of any housewife. Several types of detergent, wetting agents and chemicals are used.

Wash and rinse water is discharged with the cooling water from the nearby reactor and a continuous sample taken and analyzed for radioactivity. All laundry is monitored after washing and drying. Any which does not pass the test is washed again.

Plugging the brain drain



Shower activity

Sheridan Park, the \$100 million research concept in Toronto Township, is doing its part to stop and even reverse the brain drain of scientists and technicians to the United States. Devoted to industrial research, the 340-acre scientific community was the brain child of scientists at the Ontario Research Foundation. It became a reality in 1964 when British American Oil moved into its \$4,500,000 laboratory. There are now nine other tenants, including Atomic Energy of Canada Limited.

Donald F. MacRae, Sheridan's development manager, says that many of the 1,500 scientists, engineers and technicians working there would have gone to the United States if it hadn't been established. Now scientists are moving from south of the border to work at the park.

An example of a more unusual study at the park is seen above at AECL, where Barry West, engineer, and Mervin Richardson, technician, wear bathing suits inside a mock-up of a power station reactor. They're checking the cooling spray system on the full scale model of a reactor for Ontario Hydro's Pickering nuclear station, east of Toronto.

Breeders plans

New York State's seven major electrical utilities have announced plans to develop a nuclear breeder reactor, which produces more fissionable material than is consumed in operation.

The utilities will jointly spend some \$5 million to develop key components for the breeder reactor. The work, which will take about three years, will be done by General Electric.

Their ultimate goal will be to build a 300,000-kilowatt demonstration breeder by 1975 at a cost of about \$100 million. The reactor, known as a liquid metal fast breeder, will use a liquid metal coolant — sodium — and "fast" high-energy neutrons.

Isotopes for the prospector

A device has been developed by Atomic Energy of Canada Limited which can tell a prospector within minutes whether "thar's gold in them thar hills." It's an isotope neutron source, one of which is installed in a new mobile radioisotope laboratory. recently unveiled at Ottawa by AECL's Commercial Products

To accomplish the instant analysis, an ore sample is exposed to neutrons inside an irradiator for a precise time and then returned to the operator automatically. When he places the sample on a multi-channel analyser, the operator observes the spectrum of the radioactivity given off on a small TV-like screen. Different elements produce different patterns and the shape of the pattern reveals which element is present. The analyser measures the rate of radioactivity decay as another clue to element's identity.

Geologists have asked about the feasibility of a neutron sou container that could be lowered down a bore hole right in field. The idea is being pursued by AECL.

Current from currents

In Florida, scientists are working on a system that someday co put oceans to work generating electricity for coastal cities. idea calls for selecting an area where ocean currents - suc the Gulf Stream — run at relatively high velocity.

A funnel-shaped device would sit on the ocean bottom the large end facing the current. According to the law physics, the flow would speed up as the funnel narrowed. scientists say that water in a current normally flowing at 2.3 r an hour would increase to 34.5 m.p.h. at the end of a prope designed funnel. This would be sufficient to drive a turbine.

Slow work in the jet age



He's not afraid of dishpan hands

Cleaning power line insulators by hand is a slow but neces task in heavily polluted areas. Sometimes the high-ve water jets of conventional washing trucks just won't shi accumulation of grime. And sometimes the insulators mu covered with grease to protect them from pollutants. Ther case of shutting off the power and subjecting them to some old-fashioned spit and polish. The lineman is seen at wor Toronto's Gardiner Expressway, where road salt wafts dow is deposited on insulators. "It sets like concrete and is h remove, even with steel wool," says a Hydro spokesman.

September energy production

Primary energy provided by Ontario Hydro in Septema totalled 3.96 billion kilowatt-hours, an increase of per cent over the same month a year ago.

For the first 9 months of 1967, the total is 37.47 bil kilowatt-hours, up 6.9 per cent over the same period \$ year. Adjusted for seasonal influences, primary ene demand in September was 4.27 billion kilowatt-hos one per cent less than the previous month.

The seasonally adjusted total for September represent 51.27 billion kilowatt-hours at annual rates. This 368.58 per cent of the energy demand in 1949.



Autumn is with us again, as a glance at fields, rees and the auto workers' picket lines will conirm, and car salesmen across the land are trying o make friends with the birds, fish and animals hey will be required to peddle for the next few months. All of which suggests that it's time to mention some of the more significant man-and-uis-automobile developments which have come or our attention recently.

Man bites Mustang is the big news from down ander—except that this particular Aussie, a patriotic chap, has decided on a locally built dolden to supplement his diet. He's accepted a set to eat a car in four years and only decided on the Holden, a medium-sized car, after sampling everal models. His previous dietary excursions ave been confined to razor blades and pieces of lass and he estimates he will have to consume bout two pounds of metal a day to polish off the car in the time allotted.

Even for an Australian the project appears omewhat unusual and it's difficult to understand the analysis of th

Whatever the reasoning, let's hope he doesn't art a fad. Salt, soot and lady drivers are hard nough on the old jalopy without people ibbling on the hub caps and snapping at the enders.

Over in England, a two-year-old boy has been affected with autophobia that he actually links he's a car. Feeling a bit off color the other ay, he downed a pint of upper-cylinder lubricant free his sticking valves. His mother (God bless ose practical Britons) hurried him off to the earby garage to see if he'd put in the wrong nd of oil.

Even without running him up on the hoist they puld tell he was in bad shape and rushed the por lad off to a hospital for a complete overhaul d tune-up. We're glad to report that he's back good shape and ticking away on all four linders.

Still in England, there's the case of the dear old ly who couldn't bear to part with her 1932 stin even after it refused to carry her another le. Instead, she had it compressed into a tangular hunk of metal and installed it in her den where it continues to draw much favore comment as an example of fine contemporary

sculpture. Not that the dear soul is without her practical side. She intends to have her very compact car suitably inscribed to adorn her final resting place.

We've had occasion to point out the wonders of electricity in these columns from time to time in applications ranging from the all-electric toilet to the semi-automatic Dawson pussycat snatcher but nothing has been said of the direct therapeutic value of electricity in the raw. For this we go back a few years, to the columns of "Toronto Illustrated" of 1893 and a little item on the Dorenwend electric belt. With reference to the inventor, it had this to say:

"This gentleman, who is a native of Canada and still on the sunny side of 30, has gained a world-wide reputation as an electrician, and is the inventor of many electrical appliances, chief among the latter being his electric belt and truss, which is now extensively used in all parts of the civilized world."

And what, precisely, were its merits? According to the item, considerable.

"The Dorenwend body battery, belt and truss," the item continued, "is especially adapted for the relief and cure of all weaknesses and diseases of the stomach, liver, brain, lungs, throat, kidneys, bowels, spine, heart, urinary organs, muscular and venous systems and are applicable to both male and female."

■ That doesn't leave us with much to worry about and the fate of the device arouses our suspicions. Could it be that the medical profession, faced with the prospect of confining its administrations to the toes, nose and fingernails, bought out the rights and contrived to sink the whole outfit to the bottom of the sea?

Conceivably, of course, the lame and ailing simply chose the physician over the electrician for the care and maintenance of their vital organs with a rare bit of economic foresight. Anticipating the growth of unionism, they may have foreseen the day when every electrician would be driving a Cadillac and drawing triple wages for overtime above and beyond the standard seven hour week. They probably shuddered, too, at the prospect of the attending electrician downing tools at the sound of the noon-hour whistle while vital

connections between lung and liver remained unspliced.

In any event, the electrical approach wasn't abandoned without a struggle as the advertise-ment reproduced here suggests. It appeared in the columns of a reputable Montreal publication on November 29, 1899, and while the ad pretty well speaks for itself, some of its implications are, to say the least, food for thought. That phrase "with special attachments for men" arouses the imagination and we like the ring of sincerity in the good doctor's warning against quacks and their bogus offers.

So much for the therapeutics of electricity. How in the world anyone could be gullible enough to swallow such unadulterated nonsense is beyond us. Youthful errors and later excesses yet! Still, it wouldn't do any harm to give old Doc Sanden a call — just in case he's still around.

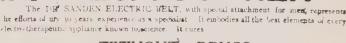
Just one more word about cars — this one on the subject of color. Dr. Peter Bothwell of England, world renowned authority on accident research, was recently credited with this remarkable statement: "Motorists should be like animals in choosing colors for their automobiles." He goes on to point out that dangerous animals or those bad to eat have been brightly colored since the beginning of time and that they spelled instinctive danger.

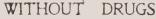
Overlooking the fact that very few animals own automobiles of any description, we must give the doctor full marks for the intent of his observations. He goes on to say that dull colors will die by popular choice and that our cars of the 1970s will have fluorescent stripes, gay-colored noses and bright flashes "like snakes and tigers." As though coached by the Hydro vice-president in charge of symbols, he concludes: "I don't say all cars will be white or yellow, although these are excellent safety colors."

In addition to their sexy appearance, then, it seems as though those new-look Hydro vehicles with their orange and red "tiger" flashes have a lot going for them in the way of safety. As Dr. Bothwell points out, "Air-force, air line and air-sea rescue authorities were the first to wake up to the conspicuity of color" — but Hydro wasn't far behind.

VIGOR IN ELECTRICITY FOR

WEAK. NERVOUS MEN





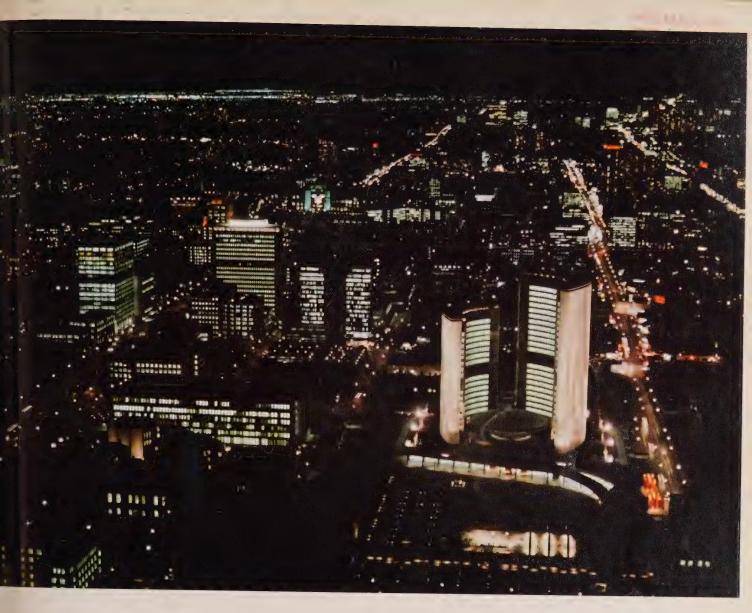
al effects of youth's errors, later exposes, etc., because Electricity is STRENGTH, and prosents applied MUSV rote in lost vitality

6,000 unsolicited to amontals were received in 1898. Currents in manify felt though made mild or strong with little regulator thumb werea.

Write to-day for free book, which explains all or drop in and countil to my office, free of charge. We are pleased to show the of genuine Electric Polt protected by United States and foreign patents. Bewere of thacks, with their logus "free trial" offers.

DR. A. SANDEN, 132 St. James Street. Montreal, Que. Office Hours: 9 to 6. Sunday, 11 to 1.







looking down on toronto
 the sound of bells
 kilowatts for Christmas

ontario hydro news

december/1967

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the cover

Looking north from the top of the country's tallest building, Toronto looks like this.
Captured for us by the camera of Staff Photographer Harry Wilson, the view suggests what is behind the December peak. It's discussed on the opposite page. For details of the Toronto-Dominion Centre, please turn to page 12.

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A Christmas message from the Chairman



At this season our thoughts inevitably tur to the blessings of Christmas and the fresh opportunities of a New Yea As Canada take

leave of its first century and enters int the second, let us re-dedicate ourselve and resolve to have compassion for others, to improve the well-being mankind, and to strengthen our count and the bonds that unite.

On behalf of all the

members of Hydro in Ontario who wo together in the service of the people our great province, I extend best wish for a Merry Christmas and for the be of health and good fortune throughout the coming ye.

Hangs Gatherest

it always happens in december

y Don Wright

At Hydro, everything's geared to the peak

everal years ago Hydro experts peered into their ery sophisticated crystal balls to determine just that the people of Ontario would require in the vay of kilowatts this Christmas. Their findings were then turned over to another group of spe-ialists whose job it was to chart the best possible bute towards this target in terms of power facilities.

ar-sighted, you say? Yes, but like the rest of us, ydro always has some last minute shopping to b. It's done by telephone from the system concludente in Toronto by experienced operators ho know where they can expect to pick up a w thousand uncommitted kilowatts through stem inter-connections with Quebec, New ork and Michigan.

chind it all is that few minutes of time, deterined solely by Hydro customers, when electrical insumption reaches the highest point it will tain in the calendar year. And it occurs with nazing regularity both as to week and to the nute,

the last 10 years, the annual peak in Southern tario, far and away the greatest part of the net-ork, occurred from December 12 to December 0f those 10 days, seven were Mondays.

lan more predictable was the time of day. Over the same period, the peak was achieved between \$15 p.m. and 5:30 p.m. without exception. In the last two years the system peaked at precisly 5:25 p.m. on Mondays and it hasn't varied the tension of the last two years.

umber of factors combine to establish the pk in the last two weeks before Christmas. In first place, it's near the end of the year and fects increased load occasioned by 12 months new construction. Too, it coincides very ely with the shortest day of the year and the d for extra indoor lighting. Temperatures are alther important factor. They tend to dip at this of the year, increasing the load in both conceinal and electrically heated homes and presses.

Gicial Christmas lighting also figures prominently nie annual peak and if Hydro can't get too rusiastic about this kind of decoration it's not cluse it wants to play Scrooge. Co-inciding as thes with the annual peak, and of short duratic Christmas lighting is probably the least detable of all loads on the system — and

A 'pp in the bucket, you say? It depends upon he ize of the bucket. Estimates suggest that est ential yuletide lighting amounts to about

360,000 kilowatts — not counting commercial decorations in office buildings, stores and shopping plazas. It's more than enough to supply all the power requirements of the City of Ottawa and equals the entire output of Hydro's Des Joachims generating station on the Ottawa River — fourth in size among the hydro-electric stations across the province.

Similarly well established factors account for the timing of the annual peak between 5:15 p.m. and 5:30 p.m. It starts to get dark before the factories and offices close; lights come on and the demands of street car and subway systems reach a maximum. Electric stove loads are added and we have the ingredients for a new high in electrical consumption.

Why mostly on Monday? No one knows for sure but one theory is that some consumer goods factories tend to go all out on Monday filling orders and perhaps taper off a bit for the rest of the week. It's still the traditional washday, too, and working housewives switch on washers and dryers on arriving home.

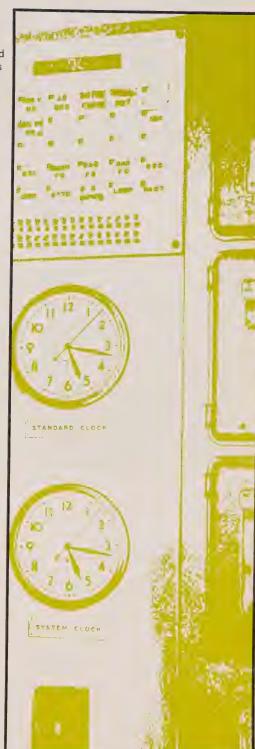
Whatever the answer, the yearly peak is the "happening" towards which the vast Hydro organization is geared. It starts when John Dobson, engineer in charge of load forecasts, sets his sights on the future.

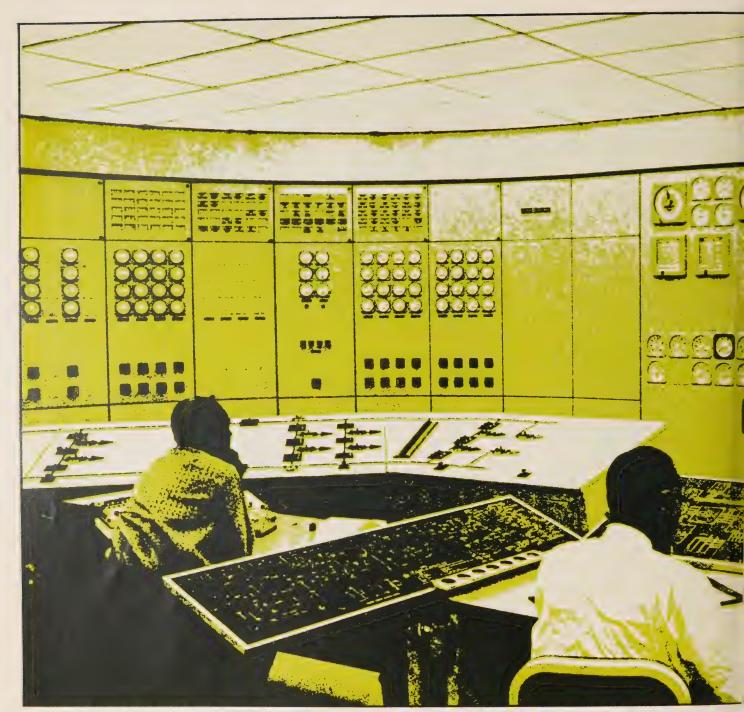
"Lead times differ for various types of facilities," he explains. "Two years may be enough for combustion turbines or three years for transmission and transformation projects, but property people sometimes like to look ahead 10 years for land acquisition. Decisions governing major thermal-electric plants are usually made seven years in advance of the target date for completion."

A great and growing number of factors is taken into consideration in this highly educated guessing game. One obvious guide is the rate of growth in the past. This isn't good enough in itself, of course, as the records suggest. In the post-war period, annual system growth has varied from 4½ per cent to 14 per cent — very considerable in terms of kilowatts. Load forecasts provided by the 340-odd municipal utilities offer another important clue.

And the computer has increased the range of outside factors it is possible to sift and weigh. These range from demographic statistics to technological trends, growing per-customer use of electricity and appliance saturation.

While methods are growing more sophisticated, the target is becoming more elusive. Competitive factors are looming larger and they're difficult to





Final men on the firing line as the peak approaches are the Richview control centre group.

assess. Electric heating, for example, is on the upswing and its very sensitive to the weather.

"Load forecasting is much the same as sales forecasting in any industry", Mr. Dobson points out. "When we refer to peaks in kilowatts, we're talking about the amount of power we'll be selling. And sales forecasting is the basis for most business planning. We have to be accurate because our capacity must be adequate without being so high as to be uneconomical."

System Planning takes over the ball from Load Forecasting and comes out of the huddle with some vital prognostications of its own. Foremost of these involves establishing the most desirable amount of generation reserve. This is a

complex and non-static situation which takes the whole character of the system into account. Variables include the thermal-hydraulic resources ratio, size of individual units, amount of interruptable load and unit reliability. It's a mathematical computation and there's no rule of thumb.

"Ten years ago we were thinking in terms of a reserve of about seven per cent as a basis for our calculations", explains H. P. Smith, engineer in charge of generation and transmission planning. "We need considerably more than that now because, for one thing, big, complex thermal-electric units are not as dependable as the relatively simple hydro plants which comprised our major generating sources at that time".

Present system reserves are some 600,000 kilowatts under the optimum for two reasons.

"As with any prediction made several years in

advance, we can only come close", Mr. Sm points out, "and recent load growth has be somewhat greater than forecast. Much mor significant in the present situation has been failure to meet in-service dates on schedule

Combining to put Hydro off target on the c pletion of new facilities have been the failu some suppliers to meet delivery dates, insta of below standard performance of new equi and the strike of construction workers. Con mencing on the first of May, and not entire settled at the time of writing, the strike defi in-service dates on hundreds of projects rai from minor line work to giant thermal-elect installations.

Having arrived at the optimum figure for re



dded it to the load forecast, System Planthen works with the Generation Design on its second major role — establishing a ation program. This is where the "mix" of burning, nuclear, hydro-electric and combine turbine generation is determined and ions are based on hundreds of economic echnical considerations known only to skilled experienced utility personnel.

nted with the recipe for the kilowatt "cake" al years in advance, it's up to the engineering onstruction people to have it ready in time at far-off December when electrical aps for the year reach their peak. The table have been set even farther in advance where hermal-electric sites are concerned because sting and property negotiations are a timeming proposition. Seven years' lead time

would not suffice if the site wasn't ready and waiting.

Zeroing-in on the annual peak, we find the people in Operations, charged with the day-to-day task of maintaining and operating the system, carrying out the more immediate procedures for assuring enough kilowatts to meet demands. In effect, they have been provided with certain assets in the way of generating stations, transmission lines, coal piles and inter-connections. Their job is to assess these resources and employ them to the best possible advantage. In the final analysis, it's up to them to meet the peak with the facilities on hand.

And they have developed a pretty smooth routine. Maintenance, for one thing, is scheduled to

avoid foreseeable repairs being carried out during the coldest months of winter. The annual peak, as Operations points out, is only based on the calendar year so that the December peak can well be surpassed the following January.

To avoid wasting water, most hydro-electric units are downed for routine maintenance in August and September while the big steam turbines get their regular check-ups from March to September.

Water resources are also hoarded in other ways for peaking purposes. Rivers like the Ottawa and Abitibi are "cycled" so that storage reservoirs are drained in time to take advantage of the spring run-off; partially emptied during the summer for the fall rains, which stoke them up again for the winter peak. As the critical period approaches this season, water storage conditions are good.

On a daily basis, the forebays of the hydro plants are drawn down during the periods of high consumption and replenished during the night.

Inter-connections with neighboring systems are another likely source of assistance and as the peak period nears, each utility keeps in close contact with the other's situation. Those with excess capacity are glad to sell while the others are even happier to buy. It's strictly on a noncommital basis, though, until 24 hours or less before the transaction.

Final men on the firing line are Jim Harris, system supervising engineer, and his men at the Richview System Control Centre in Islington. They are in immediate touch with every facet of the supply system and their expert manipulation of power facilities and complete familiarity with resources and inter-connections can mean the difference between success and failure in tight situations.

Each day they base their minute-by-minute operation of the power system on a production schedule set up the day before. This schedule acts as a road map and indicates what to expect in the way of electrical demands in the next 24 hours and weighs resources against the estimated load. Based on the daily weather report issued by the Hydro meteorologist, it really involves interpreting wind, temperature and other weather factors in terms of kilowatts. A difference in temperature of only 10 degrees can affect load by as much as 150,000 kilowatts.

When available resources fall short of expected demand, things are inclined to get a bit hectic at the control centre. Certain emergency procedures can be followed, such as operating all facilities at maximum rating and over-loading certain thermal units for short periods. Up to 300,000 kilowatts of interruptable load (power supplied on a "when available" basis to industrial customers) can be cut off.

It's under these conditions that last-minute shopping via the inter-connections comes into its own. There's no falling back on a gift certificate good for 1,000 kilowatts after the peak has been passed.

In a nutshell, a great many dedicated people work a long time in advance and right down to the wire to ensure the instant flow of power we have come to expect at the flick of a switch. Arrayed against them are the caprices of nature and the frailties of men.

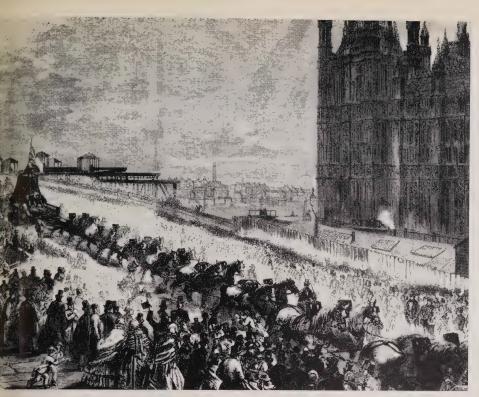
as sound as a bell



by Hal O'Neil



It's literally a case of pounding the keys to play the carillon in Ottawa's Peace Tower.



ok a team of 16 horses to draw London's Big Ben across Westminster Bridge.

cup-shaped, saucer-shaped, or hollow erical metallic device that vibrates and gives a ringing sound when struck by a clapper ammer or by a loose ball inside."

Webster's Dictionary.

er a humble description for the bell, an ument that can speak of joy and sorrow, ry and defeat, and is synonymous with stian prayer and meditation even though it part of the human scene four centuries

over the years, have developed almost ike qualities — indeed the names Big Ben, t Peter, Czar Kolokol and Great Tom est that people regard them as personalities. pir own way they have performed almost an functions, calling workers in from the , children to school, or announcing the ught of an invader.

te as World War II bells were reserved as vasion warning. Winston Churchill, between and 1943, decreed that the bells of in's churches be silent and rung only if the an invasion came. They broke the silence e aster after the danger was gone.

is rigin of bells is veiled in mystery, although eire known to have existed in the ancient i se civilization. However, use in perhaps einost notable role — announcing the hour circh services — dates back to 550 AD. of that vintage still exists in France.

of fine crop of bells from the early 1200s is linging, chiming and marking the passing They still speak as they did when first stor a bell's voice is unchanged by time.

e aking or casting of bells has remained tu y unchanged through the ages. Bell metal sti nixed in the same proportions (13 parts to 4 of tin) as it was 500 years ago. In

character it is hard, crystalline and very durable. subject only to initial surface corrosion which then acts as a protective coating. If more tin or other soft metal is added, the musical quality is improved, but the bell tends to become brittle.

There are many ways of moulding bells, but only two - the clay model method and the impression method - are now practised and the former is becoming rare.

The mould used in the impression method is made of two parts, the outer cope and inner core. These are lined with foundry sand which holds the impression of a pattern bell. The molten bell metal is poured into the top of the mould and fills the shape outline in the sand. Cooling takes anything from a day to a week depending on the bell's size.

It's then ready for grinding and buffing or engraving. If the bell's tone, when tested with a tuning fork, doesn't come up to expectations, the pitch can be lowered by grinding the inside surface or raised by grinding the outside.

The art of bell making is truly an exclusive talent at least in Canada. There's only one bell foundry in the country and that's at Breslau, near Kitchener. A father and son team are the only employees.

Carl Stoermer, 77, and his son, Herwarth, ply their artistry in a small building at the end of the local airport. The name Stoermer isn't new to the bell-making world — the art has been passed from generation to generation for 500 years. The father emigrated to Ontario in the hungry thirties from Erfurt, Germany.

Working alone in a barn at Kitchener, Mr. Stoermer kept bell-making alive with a few orders. But then World War II came along and the thousands of ships pouring out of the yards needed bells (a mandatory item under marine

"A lot of our bells are at the bottom of the Atlantic and the Pacific," says Herwarth, recalling the wartime era when, as a lad, he helped his

Ships' bells still account for a percentage of their business, although most of them go to the United States Navy and Army. The Stoermers have noticed an increase in military orders since the Vietnam war. They can't touch anything like the 193-ton Czar Kolokol bell in Moscow, the world's largest, but Herwarth, speaking around the stub of a cigar, points out that "we can make anything from one-half inch to 40

Though all the foundry's production is made-toorder, it experiences "rushes" like any other business. And they're prompted by some unusual circumstances. A few years ago, Metropolitan Toronto passed a by-law calling for a fire bell on every floor of apartment buildings. Within two months the Stoermers cast over 600 bells of aluminum - a metal which gives a highpitched, annoying sound and is deemed ideal for alarms.

Many churches around Kitchener, Guelph and Stratford have Stoermer-made bells. Even Shakespeare has been an indirect customer. A few years ago, father and son cast a 1,200pound bell which played a prominent part in the Stratford Festival presentation of Richard III.

Ringing bells isn't simply a matter of pulling a rope. It can be quite dangerous. An inexperienced bell ringer could find himself dangling 20 feet in the air if he doesn't let go at the right time. A bell or peal of bells may be rung in several different ways. First there is clocking, a simple method where the rope is tied to the clapper and pulled against the side of the stationary bell. Then there is chiming, in which an external hammer is used against the side of a stationary bell.

In tolling, the bell is swung a little and, as it comes back, the rope is checked and pulled again so that the bell stops and the clapper strikes the sound-bow. Ringing, often performed with the aid of a wheel upon which the bell is

At Breslau, the Stoermer father and son team make some of the world's finest ship and other bells. Extreme care is taken in each step, whether it's fashioning a mould, pouring the molten metal or grinding the bell down to final shape.





mounted, is swinging the bell from side to si Firing is the term applied to the clanging produced by ringing all the bells in a peal at the same time. Changes, the term applied to the procedure of ringing a peal of bells in differe order each time, is used mainly in England. Infinite numbers of changes are possible and campanologists have been known to stage marathon ringings. One of these lasted 12 hand produced 21,000 changes.

Carillons, great sets of bells played much lik piano, first made their appearance in the 15t century in Europe. Although the mechanism been refined to some extent, they still work the same manner. The carilloneur pounds w pegs or keys with his leather-covered fists. The carillon in the Peace Tower in Ottawa is probably the most famous in Canada, althou isn't the oldest. The one in Toronto's Metropolitan United Church was the first manual carillon outside Europe.

The 53 bells making up the Ottawa carillon weigh a total of 53 tons, ranging in size from 10 tons to 10 pounds. Its installation in 192 set a record — only 18 months from the init order to it being played. Thousands of tune. have been played by the carilloneur. They h to be written on single sheets of paper for there's no time to turn pages. The Blue Dan for example, stretches 10 feet long. There's humorous side to bells, too. Like the time in Venice, Italy, when three bells weighing 65 pounds were stolen before they could be in stalled in a local church. Or the Sunday mo in Spokane, Washington, when instead of I the call to worship, parishioners were treat the latest race results. It seems the amplifyi



m under freak atmospheric conditions me a receiving set for a nearby radio

on, England, has always been famous for ells. Bow Bells, so often heard on the BBC, silent for 20 years until the Christmas of when war damage was finally repaired. pells of Stepney, Shoreditch, St. Clement es, Old Bailey and St. Martin's in the Fields all been perpetuated in an oft-repeated ery rhyme.

ges and lemons, say the Bells of

owe me five farthings, say the Bells of

n will you pay me? say the Bells of d Bailey,

n I grow rich, say the Bells of oreditch,

will that be? say the Bells of pney,

ure I don't know, says the great Bell

noted of all London's bells, Big Ben, which racked with a heavy hammer when first chimes the hour for people all over the



world who listen to the BBC, or CBC for that matter. The clock and bells of Toronto's controversial old city hall are modelled on Big Ben.

Ships have bells, so do locomotives, schools, bicycles, cows and even some cats. Chapter upon chapter of history has been rung in and out with bells.

It's something to think about as they ring out across the land this Christmas season.

tinkling transistors are a myth

Electronic bells aren't really electronic at all. At the heart of many of these transistorized wonders chimes a plain old-fashioned bell.

"You can't re-create the sound of a bell or chime properly," says Art C. Scott, of Waterdown, a specialist in the field. "You can only amplify their sounds."

He explains that in building an electronic system that would produce the tone of a 2,000 pound bell, one must use a small bell of a few ounces but with the same tone and then amplify it electronically. In a carillon set-up there can be anything from 21 to 700 bell tones, but usually only 25 notes on the keyboard are used.

Mr. Scott terms the business "traditional." Although many of its methods are 20th century, they're still based on ideas evolved through the

Electronic chimes aren't just for churches. Firms like Canada Varnish, Manufacturers Life and the Bank of Montreal have installed them to soothe the wrinkled brow and calm the worried mind. The Manufacturers Life installation is in a new twin-tower building in Toronto and works in conjunction with a 20-foot-diameter clock -Canada's largest.

Bells and chimes come in several varieties and shapes. There's the rod, a long finger of metal fastened at one end — and then there's the "free-free" chime such as a xylophone which is suspended and the two ends allowed to vibrate.

Apart from playing popular classics, electronic chimes and bells also have a practical side. Firms like Edwards of Canada deal in electronic signal systems which range from fire alarms to coded summonses.

Such chimes are used in hospitals or other institutions demanding a low level of noise. Aside from fire alerts they can be used for calling specific members of a hospital's staff.

For the home, chimes range from a simple onetone type to one with eight notes which duplicates the Canterbury chimes. Prices go from a low of \$5 to \$130 for the "Cadillac" of the field.

For the church, a simple electronic installation usually costs about \$2,000. Bells can be added almost indefinitely, but according to Mr. Scott the biggest electronic installation anyone could want would cost about \$35,000."

doing a job for hydro

tinker, tailor, soldier, sailor...

... well, not exactly.

But with 13,000 regular employees on the payroll, Ontario

Hydro does have a diversity of professions at its disposal.

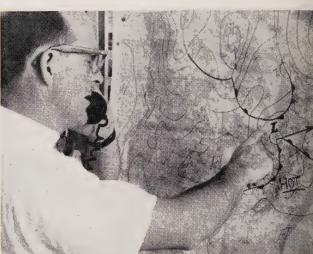
Some of them hardly call for raised eye-brows, of course. One might expect to find 400 draftsmen, 1,000 linemen and over 2,000 engineers and technicians working for a large electrical utility. And the stalwart work of stenographers, foresters, plumbers and keypunch operators is pretty well taken for granted.

Some of those with special skills were recruited from Britain and Europe. Some came from the Maritimes, others from Vancouver. They may command a variety of languages from Russian to Hindustani, from the outlines of Isaac Pitman to the Fortran of data processing Still other employees are posted abroad to advise on the construction and running of power stations in less developed countries. They have sweated it out in tropical Ghana and the deserts of Iran, in Pakistan and Brazil. The first members of a new 16-man team have just left for Nigeria.

Helicopter pilots, station operators, salesmen and carpenters also lend their weight to this \$3-billion publicly-owned organization whose primary purpose is to generate and distribute electric power across an area larger than France.

The list of occupations is endless so we've taken just a handful of the more unusual jobs people are doing around Hydro. And we hope the rest will forgive us the omission.

Power is one of the few truly instant commodities. How much people need and how much is instantly available is a perplexing question and nothing upsets the equilibrium quite like the weather. Hydro meteorologists provide specialized forecasts to eliminate the element of surprise. Demand varies with the weather. Snow, rain and cloud increase the load because more lights are used. A heat wave or cold snap means more power for air conditioning or heating. Wind can vary the level of Lake Erie sufficiently to affect the flow of the Niagara River, which in turn governs the output of the giant hydro-electric stations at Queenston. Construction and repair crews first consult the weatherman. High winds, for example, could well postpone the use of helicopters on a line-building job. It's all a matter of keeping a weather eye on those factors which can influence the supply of power.





It's an awesome feeling to stand on the pitching deck of the Maid of the Mist as she plows through boiling waters at the foot of the Horseshoe Falls. Yet far above on many a stormy night, another boat braves the swift currents of the Niagara Rive only a mile from the brink. Needless to say, the ice-breaker Niagara Queen carries no passengers. The captain, whose master's papers restrict him to the Upper Niagara and part of Lake Erie — one of the world's most treacherous stretches of water — is a Hydro man. In summer he does other Hydro work. His winter job is to prevent a build-up of ice throttling the giant hydro-electric stations further downstream. Actually, the sturdy craft requires three captains to man her around the clock. She is equipped with radar and two-way radio.

of Ontario Hydro's coal-fired and nuclear power stations its own laboratory and staff of chemists. Their job includes analysis of incoming coal to determine heating value. hur and ash content and checks on the amount of algae in ing water. With a modern thermal-electric station utilizing llion gallons of cooling water every minute, algae can soon up the works. Station chemists maintain a separate supply perpure water for the boilers. This water is purer than that edical serum and is used to check corrosion. Among other related to the safe and efficient operation of power plants, chemist conducts checks of lubricating oil and of the hydrogas used for cooling generators.





s clear underwater debris at a new power station on the waska River. Conditions hardly look inviting yet these r-suited frogmen claim they're warmer in the water than sub-zero air. Hydro has about 20 divers on staff. They're 0-way men who do other work when they're on dry land.)'s divers use both helmets and scuba gear when they inspect, repair or help build a variety of sub-surface ures. Some started diving as a hobby, others trained in the But whatever their background, they're all experts in water work.

How's this for a switch? Teachers aren't employed by Ontario Hydro, but they are hired by school boards set up under the Public Schools Act by Hydro employees. Up in the province's northland, for instance, five teachers and two part-timers run the public school at Abitibi Canyon — a 450-strong community of station operators, maintenance crews and their families. And there's a staff of 10 at the \$200,000 school opened last September at Chub Lake, a new townsite for workers constructing hydro-electric stations on the Mississagi River northwest of Elliot Lake. This year's budget for the Canyon school came to \$72,000; the Chub Lake school budgeted for \$100,000. Some older students at the Canyon are driven daily to the nearest high school at Smooth Rock Falls — a round trip of 90 miles.





This hard-working chef is not in charge of the kitchens of a plush hotel, nor is he supervising the cordon bleu cuisine of a Parisian restaurant. Yet his job is equally demanding. It's his unenviable task to provide a bill of fare that will keep rugged construction workers happy when they stomp in from a morning's stint at forty below. He may have to satisfy the appetites of 900 ravenous individuals in less than an hour and cater for a variety of international tastes from the traditional pea soup of the French Canadian to the meat-loving Russian and the macaronifond Italian. And all this deep in the Ontario bush.

Plotting a transmission line by hand is a laborious business, as the profile shows. But the computer can do it swiftly, accurately and at less cost.

Pencils, templates and even the slide rule — time worn trademarks of the engineer — are fast disappearing in contemporary electrical technology. And nowhere is this more evident than in the design of transmission lines.

Replacing them is a single tool — the computer.

Not that it's an overnight revolution. Ontario Hydro's Transmission and Distribution Projects Division started using computers almost two years ago for a variety of tasks. The latest development is just another step in the same direction.

For the next year to 18 months, a firm of engineering consultants will plot the positions of transmission towers over a selected 500 miles of line. Data programmed into the computer will be basically the same as that used with manual plotting methods. The only difference: time. While it might take an engineer a week to map out five miles of tower locations, sizes and types of footings, the computer will zoom along at an average 10 miles an hour. Once it gets going, that is. It naturally takes time to convert data collected by

survey crews into language the computer can understand. With a digit-only diet, the machine must be fed such right-of-way information as soil types, hills, river and highway crossings and other obstacles.

The smallest detail must be spelled out. In one trial, the computer perched a tower precariously at the edge of a 100-foot drop, a completely illogical choice. But the computer had simply not been told the spot wasn't feasible. Says Neil McMurtrie, senior design engineer: "It certainly forces you to think step by step what you do in making layouts."

Manual tower spotting is a laborious process.

Templates of line span and of towers of various types and heights are placed on a profile of the

route and adjusted by trial and error. Costs m considered; standards met.

And this is where the computer shines. consider a multitude of alternatives in a cerably shorter time. Engineering and office are lowered while a more precise evaluat design components should also result in construction and material costs.

Mr. McMurtrie foresees the gained time used for experimentation. "For instance, used towers of greater height, we could let the span between towers. Costs of instance would be lower, but the frequency of lig strikes would be higher. The computer will us to evaluate changes in factors such as the find the best design for each line."

Even the foot-slogging surveyor, who sti trudge through mud and muskeg, over f fences and around sub-divisions, is havi made easier by the computer. For some tin

TOWNSHIP OF GRASETT
QISTRICY OF ALGOMA

CROWN.



marks the spot

involved map-making calculations from his ings have been worked out by machine.

ide from a GE 265 time-shared computer the ion also shares a relatively unsophisticated sed-circuit" device for such minor arithmetical sas computing the square root of 7.5672 times quare root of 3.5932.

Vith these machines available, you begin to sideways at anybody who uses a slide rule any consistency," says one engineer. "It kind akes you wonder whether he's moving with imes."

this end, courses of one day to two weeks' tion are underway so that everyone in the

Design and Construction divisions will have a working knowledge of computer capabilities. More practical in nature than the courses of a few years ago, they teach students to use the machines rather than get involved with theory.

At present, the division is using a General Electric computer in offices on King Street, Toronto. The hook-up is made over normal telephone lines.

But the design programs developed by the consultants can be purchased — a move that seems likely since Hydro now has a third-generation Univac 1108 that the division is already using. Although the tower layout program is written in a different computer language, it can be translated into the 1108's Fortran.

Transmission and Distribution is also studying ways of streamlining its surveying techniques. One method calls for initial surveying to be done from the air. Stereo photographs would be taken to obtain reasonably accurate line layouts that would be later validated by ground crews. Much of the calculation would be done by computer.

The way things are shaping up it looks as though the slide rule may soon become a companion for the venerable dodo!



Dominating the skyline from any direction, the towering Toronto-Dominion Centre is about to be joined by a companion structure almost as tall. Electrical consumption of first tower equals the residential power needs of a city of 32,000.

fifty-six electrical storeys

by Gordon Murphy

All systems were go as the door snugged shon our gleaming metal capsule and only a soft hiss was audible as the ascent commen An electronic counter winked out altitudes a our eardrums were enough to record the fas changing atmospheric pressures.

For an earth-bound novice it was quite an experience, but a glance earthward from max mum altitude made the whole adventure we worthwhile.

The bright blue of Lake Ontario sparkled in the sunshine and mist rising far to the south pir pointed the great cataracts at Niagara. Just faint uneveness in the earth's crust represent the hills around Orangeville while, to the explumed chimneys identified industrial Osha

Best of all, this magnificent view isn't reselfor the intrepid astronaut — anyone can jout to the top of the 56-storey Toronto-Dominic Centre to see North America's fastest grow



centre in a brand new perspective. It's one tallest buildings in the world outside tattan and it's as modern as tomorrow — ically and otherwise.

as breathtaking as the view is the speed at a visitors are whisked from lobby to the ed-in observation gallery encircling the 55th Eight of the tower's 32 high-speed comprogrammed passenger elevators make the speeds up to 1,400 feet per minute. Outers enable the four banks of elevators in stem to "think ahead," to anticipate the eneeds of the tower's 10,000 occupants in sure that cars will be available when and eneeded.

elevator efficiency is the power unit.

ing more than 12½ tons and incorporating

ost advanced design, the electric motors

an internal brake that guarantees smooth

operation. Among the largest ever built in Canada, the power units are so delicately balanced that they can be rotated by the touch of a finger.

In the event of a power failure, an auxiliary steam turbine generator automatically cuts in to lower all passenger elevators to the lobby. It will also power one of the tower's three service elevators for the duration of the emergency.

Almost everything is a "first" in the construction and appointments of the tower and the general unit of reference is "a million." From the huge air-conditioning compressors on the 56th floor to the smallest transistorized circuits in the three underground levels with their parking and shopping facilities, the fullest possible use is made of electricity.

The tower contains about 1,540,000 feet of electrical wiring, enough to form four huge loops between the Toronto and Hamilton city

halls. Power for some 36,000 lighting fixtures and other uses is provided by Toronto Hydro at 13,800 volts and fed to various parts of the tower at voltages ranging from 120 for lighting purposes to 4,160 for the refrigeration compressors in the air-conditioning system.

Occupants of the new centre enjoy year-round climate control, a system designed to provide ideal temperature and humidity selection. Unsightly air outlets on ceilings have been eliminated. Conditioned in-coming air and that being returned to the system flows through almost indiscernible slots in the recessed fluorescent lighting fixtures. Unobtrusive heating units permit floor-to-ceiling windows,

Steam for heating and other uses comes from Toronto Hydro's district heating system, a network now supplying more than 80 large build-





ings in the downtown area from a central heating plant.

The tower's electrical consumption runs about 5,000,000 kilowatt-hours a month, about what's required to meet residential power requirements of a city of 32,000 persons. And there's more to come.

A relatively squat second tower — 46 storeys high — is under construction and scheduled for occupancy in 1969. Also part of the complex is a banking hall, a single-level structure designed to embrace a column-free space of 22,500 square feet, which will serve as the new main branch of the Toronto-Dominion Bank.

For the statistical minded . . .

- Piled end-to-end, the million-plus 16-inch concrete blocks that went into the first tower would rise 253 miles into the air and be theoretically visible from Denver, Colorado.
- Weighing in at 140-odd thousand tons, the ower about equals the combined weights of

those passing monarchs of the seas, the *Queen Mary* and the *Queen Elizabeth*.

- In terms of cooling capacity the building's refrigeration plant produces the equivalent of 6,700 tons of ice every 24 hours.
- With 19,000,000 cubic feet of occupiable space one could conclude that the entire population of Toronto, barring claustrophobiacs, could be fitted into the tower.

Among the outstanding design features of the tower is the complete flexibility of underfloor electric and communication facilities. This is accomplished with the use of cellular steel flooring and is invaluable considering the building has more than 5,000 electrical outlets and as many telephones.

The control centre for the tower's complex mechanical and electrical systems is located on the 56th floor, just above the observation gallery.

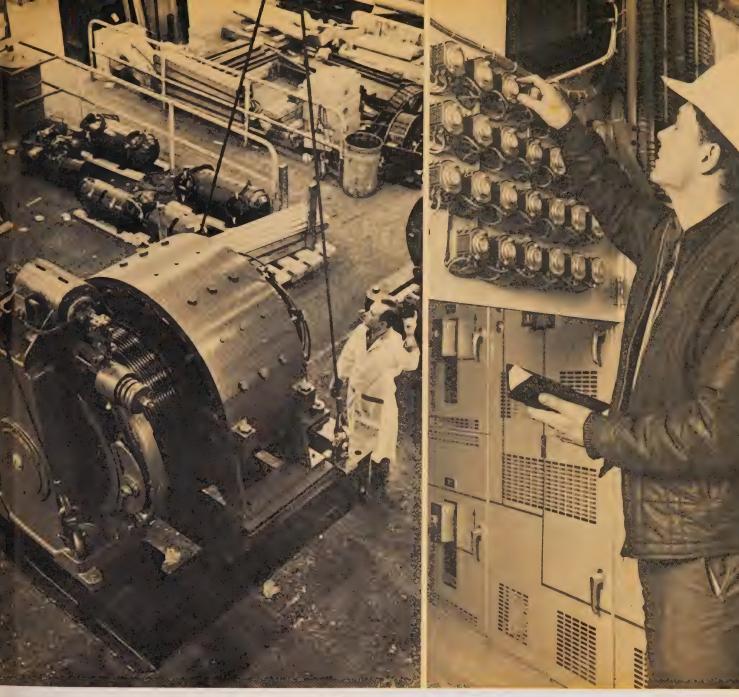
There, an operator keeps constant vigil over performance of systems throughout the build and by pressing buttons can check and adjustemperatures and humidities without leaving his chair.

Control of other electrical systems, such as f alarms, elevator inter-communication and sn melting equipment on ramps leading to underground parking areas, is also at the fingertipe the operator. He can summon a picture of a system to a projection screen incorporated in the control console.

"But," complained a building superintender "they still haven't come up with a push-but way of cleaning windows. And we've nearly seven acres of them "

With consumption running at 1,000,000 ga a day, there's plenty of water available for t job, however.

Next to the observation gallery, the concou below street level, is the big attraction of the



nto-Dominion Centre. The equivalent of a community shopping plaza, it has a variety electric restaurants, a 700-seat cinema and des a large post office.

present concourse covers a little more than acres but when the second tower is led, completing the overall concept, the ourse will be enlarged, as will the parking a on the two levels directly below.

recond tower will have all the amenities of rst. It, too, will be a monument of archiral simplicity in steel and solar bronze glass of from a granite plaza into the Toronto le.

call for a revolving beacon atop the tallest, capping what one authority describes as ture that goes beyond merely adding new to a city's skyline. It will, to paraphrase ords, serve to further accent a significant nent in modern urban design.



For a nominal fee, visitors can see the city in a new perspective from a glassed-in observation gallery. Console on 56th floor controls complex mechanical and electrical operations throughout the building. Each high-rise elevator is powered by 122 h.p. traction machine. View, left, is from adjacent tower now under construction.

Oil's birthplace welcomes hydro



Delegates from Windsor Utilities Commission . . . Maynard Totten, Malcolm Brian, Chairman Murray Whelpton and E. Cecile.



New president John T. Barnes holds round-the-table talk with his executive. From left are 2nd vice-president L. F. Ounsworth, Harrow; Mr. Barnes, Sarnia; 1st vice-president G. Morrison, Chatham; secretary-treasurer Harry Luckins, Sarnia; Harry Bain, Petrolia; past-president Roy Warwick, Blenheim; J. Young, Tilbury.



On the left, Petrolia hosts Melvin Huddlestone, Harry Bain, Nan Rose, Fred Charlton and Jim Pardy. On the right, a not-too-terrifying version of "A Christmas Carol."



Petrolia hosts district 8

An electrical conference in the birthplace of the Canadian oil industry?

One hundred municipal utility delegates not only braved dirty looks from local "Hard Oils" to attend the District 8 OMEA meeting in Petrolia, they even invited the president of three of the town's small industries to address them.

Fortunately, manufacturer Jim Pardy had been recently elected to the local PUC. In fact, he told them that small industries relied heavily upon local utilities for advice and were an important market for power consumption.

He warned commissioners not to adopt the attitude that they were experts in the technology and procedures of power distribution. "It would seem to me that the very fact you are a commissioner would lead people to believe you should have all the answers," he said. "There is nothing wrong with saying 'I don't have the answers, but I know somebody that does."

Mr. Pardy added that he was firmly convinced the small concern would continue to find a place in the economy. A company that could function with low overheads and low sales costs could provide a real service to the larger industries.

Delegates rejected a proposal by incoming president John T. Barnes, of Sarnia, that no person should fill the office of president or vice-president for more than one year consecutively. District 8 presidents usually hold office for two years.

Mr. Barnes said it was a matter of looking to the future. When the president's office was filled for two successive years there was no incentive for others to climb the ladder.

The proposal was opposed by Murray Whelpton and M. J. Brian, both of Windsor. "I was president the year before last and I assure you that only in the last two months of that term did I feel competent," said Mr. Brian. "If you want good representation in Toronto you must give your president the opportunity of learning his job and then give him the opportunity of doing it."

During a luncheon, delegates were welcomed by the chairman of Petrolia PUC, Harry Bain, and by the town's mayor, Elbert Landon. They also heard from Ontario Hydro 1st Vice-Chairman D. P. Cliff, deputizing for Chairman George E. Gathercole, who was ill.

Among the day's highlights was a skit on the gas industry staged by members of Sarnia Hydro. In a side-splitting parody of Dickens' "A Chr Carol," millionaire Gaseous McScrooge re nocturnal visits from the spirits of appliance present and future before he eventually sa

Electric, of course.

ere was a flue-cured flavor to the district 7 OMEA annual meeting



hing in his new executive is district 7 president L. W. Smith,
nburg. On the scales are G. D. Lang, St. Thomas; Ross Fewster,
soll; Wyn Gifford, Aylmer; Elmo Curtis, London; H. R. Henderson,
lstock; W. C. Pearson, Strathroy; P. R. Locke, St. Thomas; Stan
ter, Tillsonburg; R. G. Campbell, Embro; R. Austin, Arkona.

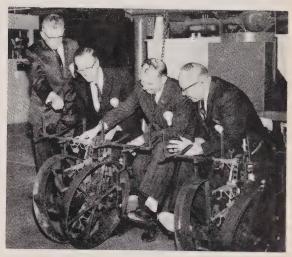


Sampling tobacco leaf is Ontario Hydro 1st Vice-Chairman D. P. Cliff. With him are L. W. Smith and Stan Webster, both of Tillsonburg. Examining tobacco planter, right, are Exeter PUC's R. E. Pooley, H. L. Davis, M. A. Greene and J. H. Delbridge.





An award for 15 years' service went to J. C. Smith, left, chairman of Beachville Hydro. Strathroy PUC chairman W. C. Pearson received a certificate recognizing his year as president of District 7.



elegates eye tobacco load

out time that electricity won some of the uring load associated with the tobacco in-60 representatives of municipal hydro is were told at Tillsonburg last month.

ressing a District 7 meeting of the Ontario ipal Electric Association in the local tobaccon building, Tillsonburg's mayor, Brian Jones, delegates to visualize the scene at the osales.

s floor will be covered with bales of the sinest tobacco," he said. "Between now e end of the selling season next March, 70 million pounds of tobacco will pass h this building. And there are two more toges similar to this.

the tobacco crop is heat-cured, but none of ectric heat. The oil and gas industries have over from the old business of burning wood al. May I suggest it is about time electricity for the job."

ct president L. W. Smith, of Tillsonburg, tobacco industry offered tremendous pofor increasing electrical consumption. The ses were able to inspect tobacco farming ants and also saw a film on the industry.

Speaking on the future uses of electricity, Gordon McHenry, manager of Ontario Hydro's Western Region, predicted that computers will one day prepare the breakfast, diagnose ailments and dispense with crammed filing cabinets and bulging in-baskets. He also forecast that tomorrow's housewife will scan supermarket shelves by TV and wash clothes and dishes with an ultrasonic device that dispenses with both soap and water.

Every home of the future will have a combined television-computer that will plan household chores, shop and even pay the bills.

"At the push of a button," he said, "the housewife will be able to summon a display of whatever she desires to the home television screen and make her selections. Other buttons will prompt the home computer to place the order and deduct the damage from the family bank account."

In medical diagnosis, sensors attached to the patient's body will send symptoms to a computer for analysis. Such a system could operate from either the doctor's office or the patient's home and was already in the formative stage.

"Your doctor will be able to draw on the entire

sum of medical knowledge for help in diagnosing what ails you," Mr. McHenry told delegates.

Desk-top computers and closed-circuit TV also spelled the doom of office memoranda. Office workers would view information on screens and either erase it at the push of a button or store it in the company computer.

Mr. McHenry said that laser beams were certain to have a profound effect on our lives. One laser could theoretically transmit all the world's radio, television and telephone traffic simultaneously. Lasers were being developed to illuminate the sea bed for oceanic research, to probe deep space, to forecast earthquakes and for possible use in treating cancer.

"What has been accomplished and what is predicted in this and other fields has sent the science fiction writers scurrying for cover," he said. "It is a case of the product of the brain surpassing that of the imagination."

After electing their officers for the coming year, delegates decided that future boards would serve for a two-year term.

millions of ways to say ho, ho

by Sheila Kenyon



Reproductions of famous paintings are a popular choice at Christmas. This card bears a color print of Signorelli's "The Holy Family."



One of the earliest cards, printed in 1843.

How many cards will you send this Christmas?

Of course, it all depends upon who you are. Individual MPs have been known to mail up to 40,000 cards — presumably an election was in the offing — although the average honorable member gets off with anything from 1,500 to 3,000. And one go-ahead company needed three six-ton trucks to cart away its quota of good tidings.

Canadians as a whole will buy more than 350 million cards this year, which works out to about 75 cards a family. Multiply this average by the population of Metropolitan Toronto and you have some idea why post offices in the city employ an extra 5,000 helpers.

There'll be 10,000 designs on the market this year catering to a multitude of tastes. Single girls frequently plump for cards showing angels or a cute choirboy. Newly-weds more often than not choose a Santa Claus design. An official of one large department store says that cards meant for husbands sell first; cards for wives go last.

Tastes have changed, too. Mother pored over the verses to decide which card was suitable for whom. Today, the trend toward packs of the same design puts a different emphasis on buying habits. We no longer purchase cards to suit our friends, but rather a card that appeals to us.

Religious cards are in. Sick humor is out. Customers at one store complained so much about sick-humor cards that the manager discontinued them.

Strangely enough, the first Christmas cards a little over 100 years ago did not reflect the birth of Christ and only in the present century did they acquire a religious context. Back in 1860, chances were that the card would be merely an embellished valentine.

Heralded as the "father of American Christmas cards," Louis Prang, of Boston, started with floral, bird and animal designs. His pet motif was a Killarney rose and he chose it for his first Christmas card. Cards in those days were beautifully designed with lace trim and silk cord for hanging in the parlor. They cost up to \$3 and have since become collectors' items.

Today's most elegantly designed cards don't sell at much more than \$5 for a box of 25.

The axiom of the greeting card industry rests on "a design to attract attention and a verse to sell it". This year we'll be seeing brighter cards reflecting the color revolution that has swept the fashion world. Santa has always been accepted with long hair and a beard, but will he be wearing pointed-toe boots this Christmas?

Apart from personal likes and dislikes, Canadians also have regional preferences. Torontonians are more likely to buy contemporary cards; Nova Scotians are far more traditional. Although it was thought that Canadians would again

want cards reflecting the Centennial, the sto don't seem to have many on display.

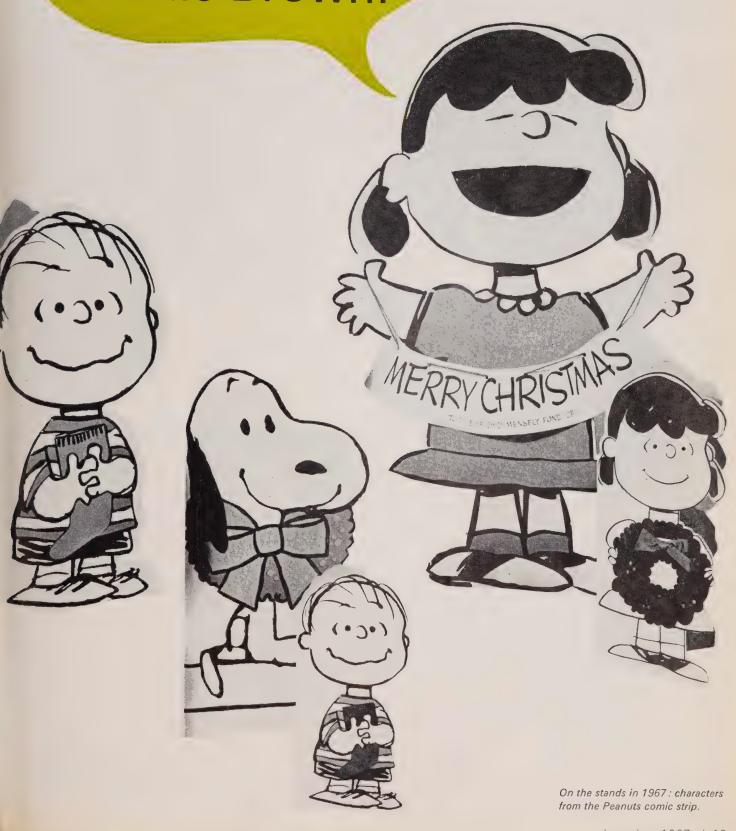
Before the introduction of the studio or con temporary card — believed to have originate Greenwich Village - 80 per cent of all card were selected by women. But apparently th male eye is more attracted by the less senticontemporary cards.

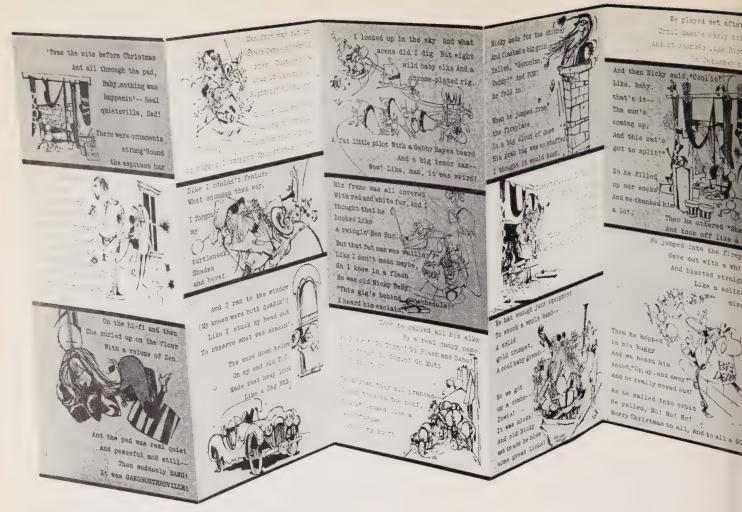
Christmas cards have long been used by bu to express thanks to customers. One of the designed in North America was for Mr. R., Pease, of Albany, New York. It simply read "Pease's great Variety Store in the Temple Fancy.'

Today there is a growing trend away from mercialism. Companies are purchasing pers cards for their executives and many large corporations order cards from charitable or zations. Abitibi Paper Company decided se years ago to commission Canadian artists 1 design their card. This year's painting is by Aldwinkle and is an impressionistic scene will be presented to the Vanier Institute of

The personal touch is frequently used by p nent people. Last year the Prime Minister's had a color photograph of the Pearsons b Gerald Campbell and said: "A Merry Chris Bonne et Heureuse Année". Malak, the Ca dian photographer, uses one of his color p to send greetings to his friends. (continue

You're the real card,
Charlie Brown!





A hippie offering, like straight from cardsville.

Many people prefer to make a contribution to charitable and medical organizations through the purchase of Christmas cards. Each year, for example, UNICEF cards pour through our mailboxes. UNICEF first started in the card business in 1958 and sold nearly 800,000. Today their sales total more than six million.

Among other groups which offer cards at Christmas are: Canadian Save the Children Fund, Multiple Sclerosis Society, Canadian Indian Centre, Ontario Epilepsy Association, Canadian Hemophilia Society, Canadian Cystic Fibrosis Foundation, Metropolitan Association for Retarded Children, the Elizabeth Fry Society, Hospital for Sick Children, and the Grenfell Labrador Medical Mission. Perhaps the smallest Christmas greeting to appear over the years was an inscribed grain of rice presented to the Duke of Windsor in 1929, when he was Prince of Wales.

There's an odd one doing the rounds this year, and it's especially for the Mod Set.

A modern version of "The Night Before Christmas," its deathless prose goes thus:

'Twas the night before Christmas, And all through the pad, Baby, nothing was happenin'— Real quietsville, Dad!

And a Happy Christmas to you, too!

Christmas and the post office

"Dear Santa,
Please send me..."

Thousands of Canadian youngsters write to Santa each year and to cope with the deluge the Post Office in Ottawa sends out a directive telling workers how to handle the letters. If they are addressed to a department store, TV or radio station they are delivered. But if they are addressed to the North Pole, chances are they'll end up in the dead letter office.

Postal officials say Canadians are pretty good when it comes to getting addresses correct and in co-operating with their request "to mail early". But with the swing to apartment living they stress the need to include the apartment number in an address.

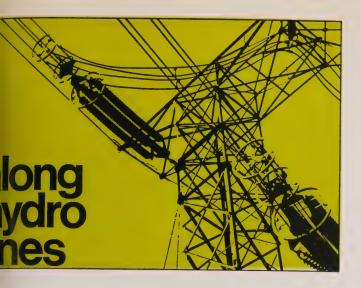
December is a hectic time for the post office. Each mail carrier has an assistant to help him deliver each day's load of greetings. Post office buildings resemble Santa's workshop as employees toil around the clock to move the mail.

The peak period begins about Dec. 11. On the

heaviest day last year, 6,250,000 letters orig from the City of Toronto. During the mon million letters arrived from local postboxes sorted for delivery.

And then, of course, there is the mail a from across Canada and the world. At the Toronto receives more than three million carletters daily. A skilled sorter can cope with 2,300 pieces of mail an hour. Mail is mostly by hand in Canada although the Post Of Ottawa has been eyeing electronic equipm the U.S., Britain and West Germany. One scanner in Detroit is capable of sorting pieces an hour while the General Post Of Britain is working on machines that with handwriting. Even if such a machine registably written M for an H, for instance, I responses would allow for this.

A new post office scheduled to be to Toronto will probably have the latest ele equipment. So chances are that machines introduced to ease the load before the deluge of cards and parcels becomes too he



pping up

o's linemen are always looking for more efficient ways of things. Take the latest technique in which men are lowered a helicopter to the top of each transmission tower. Although cted only last winter, the method has already been used on mber of jobs.

was the replacing of the skywire or lightning protection to on a line running from the Ottawa River to Toronto while a and operation in the Ottawa area involves taking the sag out to miles of line without even cutting off the current. A helier was also used to fly a six-man crew down the 65-mile oetween London and Sarnia, setting down a lineman on that towers to install vibration dampers on the skywire. The was finished in just two days.

his is becoming quite a technique," says a Hydro engineer. Vercomes problems of transportation through deep snow or s rough terrain, it saves the lineman a laborious climb and s down on unproductive time. All of this saves money."

y better electrically

pall fans will agree that the Green Bay Packers of the NFL pretty rugged aggregation, but the boys still don't appreciate cing around on frozen turf. And since Wisconsin isn't by in the banana belt they're enlisting electricity to soften the ct.

neral Electric is supplying them with a heating system cong of 14 miles of heating cable buried 6½ inches under the Automatically turned on when both the air and ground eratures drop below 45 degrees, the system has a capacity 0 kilowatts. It's believed to be the first installed to keep the drom freezing. Similar systems are designed to keep grassing for a longer period.

ast might be a good idea if Canadian Football League clubs a tip from their American counterparts. Imagine how much the Grey Cup game would be with subterranean kilowatts ing the soil.

ermen meet

rear's Metermen's Workshop was a three-phase effort with ally talks and a panel discussion but a tour included for good are.

d at Etobicoke's Skyline Hotel every November since 1962, orkshop kept the 247 delegates — representing municipal s, manufacturers, Ontario Hydro and government depart—humming with activity. The workshop is designed to these men together to talk over common problems and is

sponsored by the Metering and Service Entrance Equipment Committee of the Association of Municipal Electrical Utilities.

A. Gordon Stacey, president of the AMEU, in his keynote address traced the development of the sponsoring committee through the early years of the association. Speaking of the educational aspects that the workshop has taken on, he emphasized the growing need for training and retraining of personnel in all areas of municipal utility operations. He then outlined present and future educational programs.

For the first time, experts from major meter and metering equipment producers appeared on the program. R. W. Tracey, of Sangamo Company, Springfield, Ohio, outlined new trends in the residential metering field. He was followed by J. S. Coopman, of Ferranti-Packard Electric, St. Catharines, who delved into the world of electronics in discussing meter testing.

Automatic meter reading was the subject of Roger E. Medlin, of Westinghouse Electric, Raleigh, N.C. Canadian General Electric instrument specialist J. R. Fydell, of Quebec City, closed the manufacturers' part of the workshop with a talk about peak load control.

Although it was headlined "What's Your Beef?" the next session had nothing to do with dinner. Instead, a panel moderated by R. R. Urquhart, of Ontario Hydro, fielded questions from the floor. While the session got off to a slow start, everything from equipment deficiencies to meter testing methods came under the gun before it was over.

A tour of the Ontario Hydro Service Centre followed dinner at which John Dawson, Dunnville PUC manager, spoke about his visit to a recent international convention in Czechoslovakia. Mr.





Hm, obviously a 3-phase, 76-Mva, 150 MHz whatnot.

Dawson is shown examining equipment displayed at the meeting. Also pictured are two delegates from Smith's Falls Hydro, C. Lebelle and G. T. Houcks.

More delegates than expected took in the tour and a third bus was hastily pressed into service. Along with the new Central Meter Shop, the visitors got a look at the W. P. Dobson Research Laboratory and the centre's Electric Standards and Metering section.

Other speakers on the program were D. L. Smith, of the Electricity and Gas Division, Federal Government Standards Branch; R. D. Butler, Stratford PUC; and K. L. Bellamy and J. L. Witbeck, of Ontario Hydro. Their topics ranged from the general service rate to inspection problems.

Marking time

A cairn is being erected as part of Oliver Township's Centennial activities to commemorate the start of construction on the Kakabeka Falls power project. Located just west of the Lakehead,

the cairn will mark the year 1906 when the dam was started. Work on the station by the Kaministiquia Power Company took over 10 years to complete. It was acquired by Ontario Hydro in 1949

Officials hope enough quartz can be salvaged from the old Silver Mountain mine to complete the five-foot structure. A bronze plaque will tell the story of Kakabeka Falls.

Sir Adam in 3-D



School sees ceremony on TV

A three-dimensional mural honoring Ontario Hydro's first chairman Adam Beck has been unveiled as the Centennial project of the London school that bears his name. The mural depicts man through the ages and is the work of Canadian artist Herbert J. Arris. It stretches 27 feet across a wall inside the main entrance to the Sir Adam Beck Secondary School. Ontario Hydro provided one-third of the \$4,200 cost.

Closed-circuit TV relayed the unveiling to the school's jammed auditorium. Shown at the ceremony are Ontario Hydro's First Vice-Chairman D. P. Cliff, school principal C. G. Chapman, student Margaret Gordon, Mr. Arris and Bob Zinner, also a student.

New use for aluminum

Close on the heels of the success of aluminum conductors for high voltage transmission lines, producers are promoting the metal in another electrical application — the wiring of buildings.

Although aluminum is a good conductor, there were many technical problems. These are now said to be solved. The Aluminum Company of Canada has launched an advertising campaign and is distributing a booklet describing the installation of solid aluminum wiring.

Alcan says there are already more than 700 homes in the Toronto area with aluminum wiring. It claims that use of the metal will cut installation costs by 20 per cent.

Village signs up

Latest to sign an agreement with Ontario Hydro for the supply of power at cost is the picturesque village of Fenelon Falls, on the Trent Canal system.

The community was one of the first in Ontario to generate electric power. As early as 1895 the Fenelon Falls Electric Light Company had a 30-kilowatt station on the left bank of the Fenelon River. The local Board of Water, Light and Power Commissioners has generated its own power for almost as long, but for nearly 20 years has supplemented it with power purchased at a fixed rate from Ontario Hydro.

Although power supplied on this basis was more expensive than that bought by other municipalities under cost-contract

agreements, villagers have since 1954 twice rejected the ide becoming a Hydro municipality. In a plebiscite last spring, he ever, they voted overwhelmingly in favor of it. The local comsion will continue to operate its own power plant.

Under the big top

Plans for a \$6 billion domed city to provide year-round clicontrol have been expounded by a General Electric scie Located on the windy barrens of North Minnesota where lacheap, the community would be built from scratch and happenlation of 250,000. It could be finished by 1976.

Because it would be free of congestion and air and water lution, the city would be a mecca for people, commerce industry, said the scientist. The research phase is well under through federal government and Minnesota industry gramong the team working on the project is R. Buckminster F designer of the geodesic dome used in the United States pavilion. Present thinking is to design the city for walking automobiles. All transportation would be electric and unground

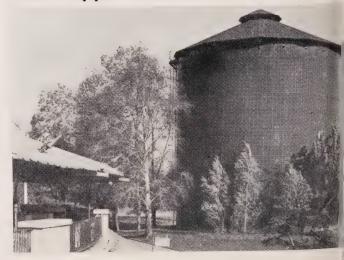
Computer failures

Half the computer installations in the United States are econ failures and the probability of success for new installation very small, Richard Brandon, president of Brandon Systems tute, New York, told a joint meeting of the Data Proce Management Association and the Computer Society of Car

He cited three basic problems in computer management. was rapid staff turnover — between 25 and 40 per cent and in the U.S. The second was communication — between compeople themselves, between computer managers and somanagement and between computer management and commanufacturers. The third was one of resource management and data-processing managers are relatively incompetent is skills of management. Most, in fact, are just grown-up to cians."

Mr. Brandon urged Canadians to develop a uniform standards for measuring methods and performance. He said a broad program of education was needed to train management people, operating personnel and other comtechnicians.

Tank topples



World war veteran fades away

A familiar landmark will disappear from Queen Victoria! Niagara Falls with the dismantling of a huge surge tar ty valve—for the Ontario Power generating station at the of Horsehoe Falls. The tank connects with a wood stave line carrying water to the station's turbines.

stalled as an emergency measure in the first world war, the line is being taken out of service and the tank is no longer ired. The station's two original pipelines remain in operation ther with their surge tanks, one of which bears the colored dlights that play on the falls.

rtical stop



he message?

warning signs for transmission towers have been developed ontario. Hydro for application throughout the province. The adhering vinyl stickers of red, black and white will be used ach tower leg at eye level. They incorporate the internation-used octagonal red "stop" sign.

nce the signs are pliable and temperature-resistant, linecan apply them quickly without special tools. Pictured with new sign are Warren Clifton, Ontario Hydro's Accident Preon director, and Bob Wykes, transmission and distribution neer.

nunicipal briefs

dsor Utilities Commission has spent more than \$3 million oving and enlarging its electrical system since the city exed its boundaries two years ago. Population of the area and almost doubled at that time.

and Hydro hopes to buy eight acres on East Main Street as site for a new service centre. The commission must seek all approval because of a city by-law forbidding the sale of in less than 10-acre parcels.

W Hydro is buying a warehouse for conversion into an e and service centre. The utility's present office is away from Dwn's business section. Total cost of the building and land:

als of the Ontario Housing Corporation were swamped applications by senior citizens for apartments in a new allic building at Newmarket. A similar project is nearing commat Richmond Hill.

the completion of a three-storey extension to their office and be building on Mosley Street, employees of Aurora Hydro have room to swing the proverbial cat. The existing offices built in 1950 to serve a population up to 10,000. The

\$110,000 addition will allow the utility to cope with five times that number.

With the expected annexation of the townships of Widdifield and West Ferris by North Bay, yet another merger is on the cards. This is the proposed amalgamation of the area's hydro and water systems. The move is expected to streamline service and reduce costs. From the new year, the city will swell to 40 times its former size while its population will double to 46,000.

To safeguard backyard living, Galt PUC will in future dig up the front rather than the rear lot when installing underground services. Manager David Durward says excavation in a modern backyard would likely destroy landscaping or a patio.

Galt PUC is building a mobile transformer to handle emergencies at industrial plants. The \$20,000 piece of electrical hardware will be transported by trailer. It will replace small sub-stations in the event of a breakdown.

John J. Campbell has been appointed comptroller of Scarborough PUC. For the past two years he has been supervising municipal accountant for Ontario Hydro's Central Region. During his Hydro career, Mr. Campbell has also worked at Belleville, Tweed, Bancroft, Oshawa and Toronto.

Streetsville's \$130,000 all-electric library is now completed. The new building consists of a main floor and a finished basement with washrooms, a small meeting room and space for future expansion.

Hat tipping

The issuing of Ontario Hydro's annual report provided an opportunity for the Ottawa Citizen to laud the concept of publicly-owned Hydro in Ontario.

In part, the editorial said:

"Ontario should be proud of this huge and efficient power system. It gives the lie to those who insist that only private enterprise can or should enter into any kind of direct production. In the case of vital natural resources which belong to all the people, it is perfectly legitimate for the people, through government, to make the investment and carry out the enterprise for the benefit of the whole economy. The HEPC remains a most powerful and impressive example of this process at work."

On the move



Rooms with a view

Precariously balanced above the waters of the Grassy River, this house is being moved 16 miles into Timmins from the Wawaitin Falls hydro-electric station.

Wawaitin is one of three small power stations on the Mattagami River to be fitted with remote-control equipment. They are now operated from Timmins transformer station. Resident operators have been transferred and homes moved out. The house shown crossing the bridge is the last to go from the Wawaitin site.

The conversion of small power stations to automatic or remote control is a continuing Hydro policy. It cost \$600,000 to convert the Mattagami River plants at Wawaitin, Sandy Falls and Sturgeon Falls. But engineers expect annual savings of \$100,000.

Picking up the pieces



Just off the boat.

Three hundred and fifty tons of bits and pieces were delivered at Sarnia last month by the West German freighter Erich Schroder. The parts were for a huge coal-handler that will stack and reclaim coal at Ontario Hydro's Lambton power station, a few miles south of the city.

When completed, the machine will tower five storeys high and be the largest fully automatic unit of its kind in North America. It took three truck floats and 10 trucks to transport the equipment to the Lambton site.

That's travelling, man!

Two electric cars being tested by the Pennsylvania Railroad have clocked speeds of 164 miles an hour. The self-propelled cars are destined for a high-speed line between New York and Washington early next year.

Conditions for acceptance include acceleration of six-car trains to 125 miles an hour in two minutes, to 150 miles an hour in three minutes and sustained speeds of at least 160 miles an

Steam plant to burn gas

Toronto Hydro will run its Pearl Street steam plant on natural gas for six months beginning next May in a measure to reduce air pollution. But the plant will continue to burn heavier fuels in the winter, when gas is in short supply.

General manager Harry Hyde says the utility will receive offseason gas from May 1 to October 31. The plant, which supplies steam heat to many downtown buildings, was designed to accommodate gas burners when it was built in 1963. At present it burns a low grade of fuel oil.

Sanatorium may close

Beck Memorial Sanatorium — a London centre for tuberculosis treatment since 1910 — may close with the opening of the multimillion-dollar hospital at the University of Western Ontario.

A 50-bed treatment centre is included in the hospital plans and consideration was given to operating the sanatorium as a

"support unit." Current thinking, however, is to establish a su unit near the university rather than continue with the 57-year sanatorium.

The Beck Sanatorium was established by Ontario Hy first chairman, Adam Beck, and his wife. Their daughter tuberculosis.

Power site gets OK

Ontario Hydro will take up options on about 565 acres of proat Bath, in South Fredericksburg Township, 20 miles we Kingston, for construction of a power plant. Chairman Georgathercole said last month that intensive site investigations revealed the location is suitable for a station in the 2,000 kilowatt range.

While a firm date for start of construction has not been so Hydro has to acquire sites for generating facilities well in adv of actual construction to avoid interfering with developme the area. The property was optioned about six months ago to mit exploratory tests of foundation and other conditions.

New Lamp-lighter

The song-fabled old lamp-lighter just isn't the same anymeter St. Catharines. The PUC recently took delivery of a \$2 bucket truck — the first of its kind in Canada. And it's specified designed to keep the city's 8,000 street lights in top conditions.

It's a one-man operation. After pulling up under a ligh setting the brakes, the operator climbs into the bucket and borne. He can move in any direction through controls in the let. As part of a new street light program, bulbs will be charactery six months and the reflectors washed, rather than w till they burn out.

Technical talk

Copies of the following papers can be obtained from the Relations Division, Ontario Hydro:

The Short-Circuit Characteristics of Subtransmission and S Feeder Cables, by Allan S. Jones, Ontario Hydro Transmissic Distribution Projects. Given at the Canadian Electrical Association Distribution Section, Montreal, September 27.

Computer Usage at Ontario Hydro, by Ken Ingram, O Hydro Data Processing. Published in the Toronto Chapter Broof the Systems and Procedures Association, October issue. Air Quality Control, by George E. Gathercole, Ontario chairman. Given at Metropolitan Toronto Works comm. November 14.

October energy production

Primary energy provided by Ontario Hydro in Octob totalled 4.36 billion kilowatt-hours, an increase of 6 per cent over the same month a year ago.

For the first 10 months of 1967, the total is 41.83 bi lion kilowatt-hours, up 6.9 per cent over the san period last year. Adjusted for seasonal influence primary energy demand in October was 4.37 billic kilowatt-hours 2.2 per cent more than the previous month.

The seasonally adjusted total for October represer 52.40 billion kilowatt-hours at annual rates. This 376.70 per cent of the energy demand in 1949.



ess our buttons if it isn't almost Christmas. We now this because of a recent visit to a departent store for our annual supply of humbugs. Utside it was just like any other day — foggy, amp and miserable. Inside it was Christmas with udspeakers blaring Jingle Bells, Santa Clauses to ho hoing and little children with the gimmies ing cuffed by their parents to the tune of Harker Herald Angels Sing.

Even the reindeer were there and we caught a mpse of red-nosed Rudolph skulking behind poinsettias and swigging copiously at a flask eguised to resemble a sleighbell.

Shaken but still impervious to the blatant andishments of the department store and its vitation to make it a greenback Christmas, we enaged to maintain a straight line to the candy unter, faltering nary a step short of the cash gister. Our resolve only dissolved when this echanical monster snapped open its drawers the haunting strains of a Mendelssohn oratorio erspersed with the first four notes of *O Canada* it being both Christmas and the Centennial, a understand.

Completely undone, we sidled over to Rudolph to allowed us, upon pain of disclosure, to ring to a few liquid notes from his sleigh bell in exange for a handful of humbugs. Infused, as it are, with the spirit, we decided to do at the ristmas shopping then and there. Formerly a core comparable to that faced by the early Chrisms in attempting to persuade the big pussycats at it wasn't really dinner time, Christmas shoping is really a snap with the electronic equipment wavailable.

The computerized gift selector featured by this ticular store worked like a charm. Feed it a few all statistics relative to the victim being shopped and out pops the perfect selection every time. Take Aunt Tiberius. She's tough to please—is because she has everything but because she had everything but because she had anything. She's 96 years old, deaf as a set and never did learn to read or write. For the imputer, she's a breeze. In go her dimensions 19-39-49); color of hair (none); leg length 19, left, 39, right); sex (indeterminate) and hobes (ha).

At the wink of a diode, out comes the answer — Nonth's supply of birth control pills done up in Achet of lavender. Pretty neat, what? And next year it will be even easier. Aunt Tiberius likes to keep up with the times and in her condition she'll welcome the outcome of a recent U.S. survey suggesting that sex is running a poor second to drugs with the "in" crowd. For '68 it'll be LSD and lavender for the dear old soul.

■ Unfortunately, there's a lot more in the air than snowflakes and sleigh bells these days as the prophets of doom have been pointing out with mounting hysteria — some 57 varieties of corruption, for example, each and every one of which is hell-bent on seeing us to an early grave.

How long has this air pollution business been going on? Quite a while, we suspect. Much of it can be traced to that memorable day when all the local politicians gathered outside Premier Stone-flint's cave to hear speeches and roast dinosaur eggs at the official dedication of fire as a servant of man. Long before that, of course, men were sneezing into their pterodactyl-skinned hand-kerchiefs during the hay fever season and cursing the dusts, pollens and other airborne pollutants deemed to have reached catastrophic levels.

True, we're an ingenious lot and we've been very successful in developing new and improved techniques with which to louse up the atmosphere. Take the poor chap in London who was actually hanged for defying local air pollution legislation by burning coal in pursuit of his craft. That was over 500 years ago and more recently, at the beginning of the Industrial Revolution to be more precise, Shelley was moved to write: "Hell is a city much like London, a populous and smoky city."

All we're trying to point out is that the CBC didn't invent air pollution. It's been with us for some time and seems to go hand-in-hand with just about everything we do. We can't switch on the furnace or drive to the office or even do the dishes without adding our little bit to the whole messy business.

Please don't misconstrue this as the opening remarks in an all-out campaign to promote air pollution. Put us down as being against poisons in general and genocide in particular. We don't even bury razor blades in our Hallowe'en apples. But let's keep our cool.

Pollution is a mind-boggling problem occasioned, when you get right down to it, by more and more people having to live, work and play in an environment that isn't going to grow any larger. Much is being done, but we'll have to learn to be a whole lot tidier if we're to avoid fouling the old nest beyond recall.

Some viewing with alarm is undoubtedly called for at this juncture — so long as we avoid panic and get on with the job in a rational and commonsense manner. It's a time for decisive but well-directed action — not for mounting the old white charger and dashing off in all directions at the drop of a cinder.

Last month we had some facetious remarks to make concerning electricity's failure as a cure-all for our physical and mental ills as promised by such eminent turn-of-the-century electro-medical geniuses as Dr. Sanden of Montreal. His device, you may recall, was guaranteed to restore vigor in weak, nervous men at the touch of an electrode.

We also pooh-poohed that young upstart electrician named Dorenwend who claimed in

1893 that his electric belt and truss would cure every ailment from a pallid complexion to cancer of the capricorn. Sure, they might have been carried away a bit, but we're having second thoughts in the light of recent developments. These range from electrical sleeping pills to anti-fatigue devices and include a special electric blanket for sick chimpanzees.

Electrically-induced sleep, introduced and developed in Russia, is now coming into its own elsewhere. An Israeli doctor, for instance, is using it to treat bronchial asthmatic conditions and believes this use of low-voltage current will be a valuable aid in treating mental illness and insomnia. Electrical sedation avoids the allergic reactions and hangovers associated with sedatives and hypnotic drugs.

Even more merciful, electric sleep is beginning to take the edge off the dentist's drill and enable the patient to chortle at that old familiar three-foot needle previously used to inject pain killer into the jaw. At least that's the experience of a Baltimore dentist who's used the technique on a number of occasions with considerable success.

But don't expect to be greeted by friendly kilowatts on your next trip to the chair. Electrosedation is still very much in the experimental stage and some bizarre phenomena have been reported. One patient enjoyed the experience so much he begged the dentist not to turn off the current!

Like they say, man, forget the pot and shoot us a watt — electricity is for travelling and there's no bad trips.

And on that jolly note, we'll bah another humbug and turn to our real forte for a seasonable finale — the rhymed couplet in iambic pentameter. We'll call it "Ode to the Missing Chimney", or "Get with it, Nicky baby, and use the Front Door." You, dear reader, may call it what you wish.

"T'was the night before Christmas when all through the pad,

Not a hippie was stirring, not even old dad.

The swingers were tucked all snug in their sacks,

From inhaling bad pot they were flat on their backs.

When out on the rooftop there arose such a grumble,

They thought old St. Nicholas was having a rumble.

Turned on at the din, they all jumped to the floor,

Electrically heated, t'was warm to the core.

To the door they all dashed for a glance at old Claus,

Clad only in G-strings, they were breaking the laws.

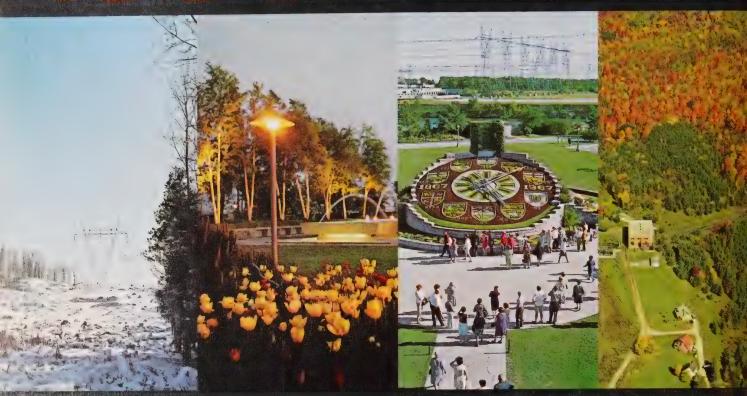
He's a phony, they thought, and a bit of a drag.

But could be he's got LSD in his bag.

Not a sign did they see but they heard him say grimly,

To hell with them all if they ain't got no chimbley.

1968



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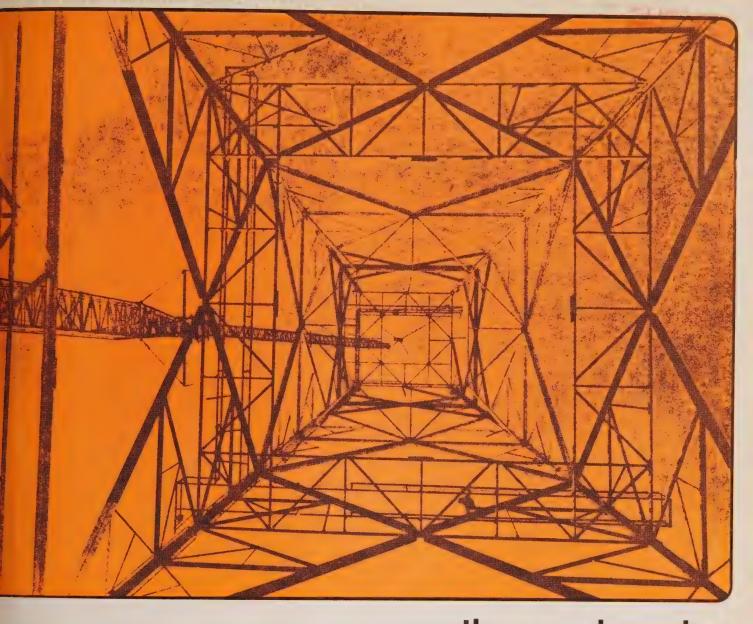
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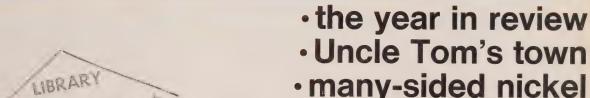
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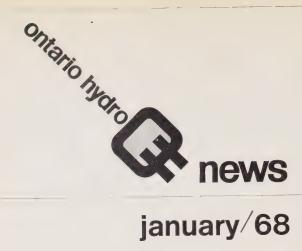
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the cover

Intricate filigree pattern is really the view one gets by looking straight up a half-completed transmission tower. Construction news figures prominently in any Ontario Hydro progress report, for Hydro must keep on building to meet the growing demand for power. But last year's construction program was severely curtailed. Chairman George E. Gathercole discusses this and other developments of the year in the following pages.

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hydro news, volume 55, number 1

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a report from the chairma



George E. Gathercole

ario Hydro was set to break all records last year. The oduction of more than one million kilowatts of new erating capacity was scheduled. It would have been the est annual addition ever to our power resources.

our hopes never materialized. Of new equipment scheduled service, only about half actually produced power. Three ors were to blame: labor problems did much of the damage the situation was aggravated by the late delivery of pment and the frequent inability of equipment to meet dards.

result, every available piece of generating equipment was sed into service to cope with soaring demands for power, ch preliminary figures show hit a record 8,926,000-watt peak in December. Fortunately, high water levels in a Erie and Lake Ontario gave us fuller use of power plants on Niagara and St. Lawrence rivers, while water storage ditions in many other areas were good.

eration reserves are below optimum, but the tight power tion is not unique to Ontario. Many other utilities face ar difficulties. Ten years ago we thought in terms 14 per cent reserve. Today we need considerably more use, for one thing, modern thermal-electric units are not ependable as the relatively unsophisticated hydro-electric and they are much larger.

n a generator the size of those being installed at the oton coal-burning station, near Sarnia, breaks down, the em is instantaneously deprived of 500,000 kilowatts ower. That's almost enough to provide all the city of ilton's power needs.

t were our specific problems last year? Well, 13 member as of the Allied Construction Council went on strike ay, marking the end of 16 years of successful bargaining. Hydro accepts wage rates applicable to local labor ets, the issues were not matters of money.

the unions asked for four major concessions:

It Hydro recruit exclusively through the union.

It the unions determine the sources of equipment and uninery installed at construction sites.

t jurisdictional disputes be settled by a tribunal in ington.

t non-working foremen be members of the bargaining unit.

re fully aware of the gravity of the situation which the
created and its implications for power users. But if we
esce in matters of principle, it is difficult to find

substantially to improved working conditions and this is fully acknowledged. Theirs is an important role. But unreasonableness on the part of labor is just as intolerable as it is on the part of business.

any firm ground on which to stand. Unions have contributed

Nine of the unions signed a new agreement in July and the others returned later. Of course, Hydro was not the only one to suffer from labor disputes. Strikes also crippled the \$450 million construction program throughout Metropolitan Toronto.

Widespread pressures for wage and salary increases pose a serious threat to the economy. This year will probably see prices rising strongly, unemployment moving up moderately, and productivity gains lagging. Canada's rate of expansion slowed sharply toward the year-end while price increases accounted for a large proportion of the gain in gross national product.

Ontario Hydro itself was caught up in the inflationary spiral and was forced in November to announce increased interim rates for power supplied to the 355 municipal utilities. The new rates mean an average increase in power costs to the individual municipalities of about six per cent. Some utilities will be able to absorb the increase; others will be obliged to pass it on to their consumers.

We have fought the trend of rising costs successfully for a number of years. Rates have been reduced in some instances, and in many other municipalities they have gone unchanged for a decade or more. But costs have escalated recently beyond our capacity to absorb them.

One of the principal problems is that of high interest rates. Our borrowing must cover new money requirements as well as refinancing for maturing bonds. Not so long ago, Ontario Hydro could borrow money at four per cent or less. Our most recent bond issue carried a rate of nearly 7 per cent.

Like time, power demands wait for no man and we cannot delay projects in anticipation of more favorable money markets. Our engineers predict that peak demand may reach almost 10 million kilowatts this year. We are forecasting a capital expenditure this year of \$281 million, up 20 per cent. The system's operating and maintenance costs may rise as much as 10 per cent.

Also contributing to the failure to meet last year's targets was the problem of late deliveries, a problem compounded by equipment that didn't come up to standard. Electrical utilities must be assured of a dependable supply of essential equipment, delivered on time and built for trouble-free operation.

This is one of the most serious difficulties confronting the







Casting a smoky pall over 1967 was the continuing problem of air pollution, left. Hydro is spending \$30 million on pollution control measures. Industry as a whole is responsible for about one-third of Toronto's air pollution. While severely curtailed by strikes, construction did show some progress during the year. Giant transmission tower is seen rising above a cornfield near Sarnia while workmen, right, inside nearby Lambton power station bring the plant to initial readiness. A de of champagne and flags came in April with the launching of the Uppe Lakes Shipping coal carrier, Canadian Century. The vessel will keep Ontario's thermal power stations supplied with fuel.

electric power industry and the solutions will be neither qui nor easy. They call for the utmost effort and co-operation b manufacturers, suppliers and utilities alike.

Air pollution engendered a great deal of public interest last year and I would like to reiterate that Ontario Hydro is fully prepared to accept its share of responsibility for maintainir satisfactory standard of air quality in the community.

Admittedly, we contribute to air pollution. There is no way by which the large quantities of coal that Hydro consumes can be burned without discharging some impurities into the atmosphere. But it would be unfortunate to leave the impress that if Ontario Hydro would only close down its thermal plants, the air pollution problem would quickly blow away.

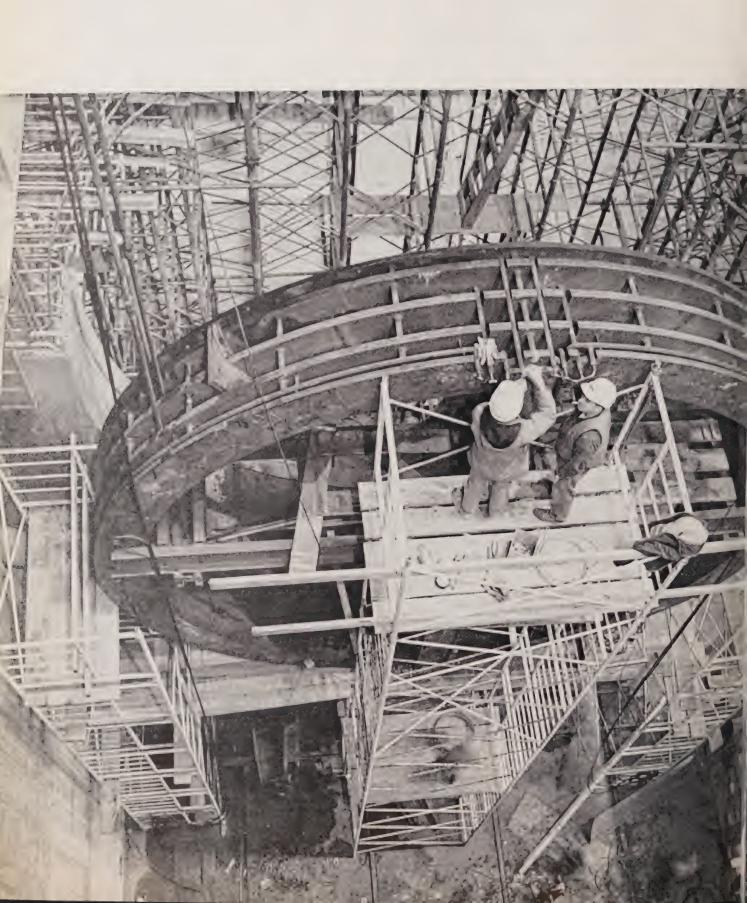
Studies have shown that one-third of Toronto's air pollutio comes from combustion and fuel-burning equipment, one-third from automobiles, buses and trucks and one-thi from industrial plants, including power stations. There are main pollutants — fly ash and sulphur dioxide — and substantial success has been obtained in abating the forme

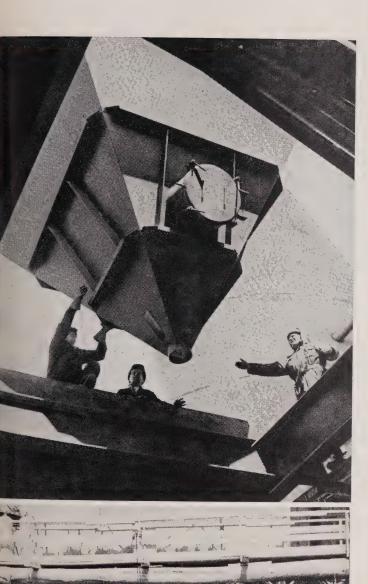
Control of sulphur dioxide is a different matter and despite intensive research in the United States, Britain, Germany, Japan and other countries, a satisfactory, practicable method of controlling emissions of the gas has yet to be developed.

Nevertheless, we have established practices to minimize the problem. We have built tall chimneys to disperse the gases and are building even higher. In addition, the coal used at thermal plants has the lowest sulphur content available on a long-term contract basis. We have spent or committed \$30 million on pollution control measures.

Coal plays an important role in the production of power and continue to do so for the foreseeable future. Last year we bought about 5,300,000 tons from Nova Scotia and the United States. Adding to the cost of imported fuel was the imposition of lockage charges on the Welland Ship Canal. These will increase by 400 per cent over the next four years









Modern technology harnesses the power of the atom, coal and falling water. Workmen are installing part of the reactor end shield at Pickering nuclear power station, east of Toronto, lowering a fly ash hopper into position at the Lakeview coal-burning plant at the opposite end of the city and building a giant penstock that will carry water to turbines at an extension of Barrett Chute hydro-electric station, on the Madawaska River. Top photo shows part of the Madawaska last fall, when the water level was lowered during work on the dam at Stewartville generating station, a few miles downstream from Barrett Chute.

by 1971 will add about \$400,000 yearly to our coal bill. It is to be hoped that tariff reductions, if implemented, will at least offset the new lockage charges.

One event that could have far-reaching consequences for both Ontario Hydro and the municipal systems was the publication of the Smith Report on Taxation.

At the moment it is merely a set of recommendations and much study is needed before its full implications can be assessed. However, it is our responsibility to ensure that the sound and proven principles on which Ontario Hydro has operated since its inception are not lost in the pursuit of what may be abstract and possibly unattainable goals in taxation.

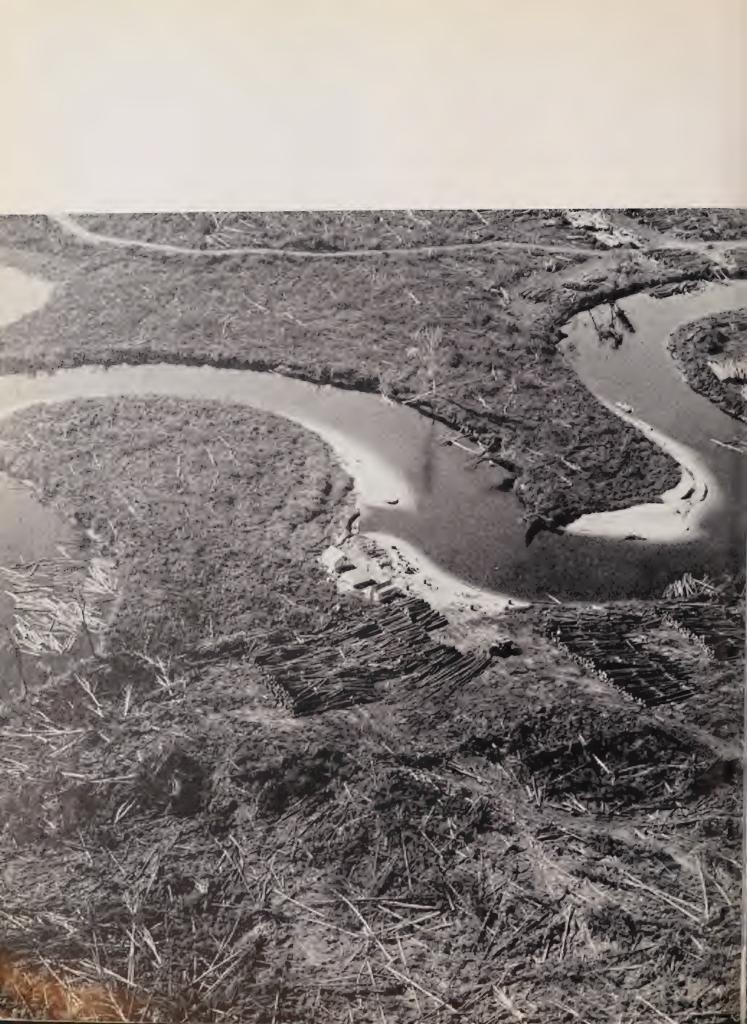
Our primary objective in 1968 must be to get construction back on the rails. We have much ground to make up and plan to introduce more than a million kilowatts of new capacity.

Perhaps the most significant announcement last year was the decision to double the capacity of the nuclear power station at Pickering, east of Toronto. Pickering's first 540,000kilowatt unit was scheduled for service in 1970. Total cost of the four-unit plant — the second largest in North America is estimated at \$528 million.

To give some indication of the magnitude of our nuclear construction program, we expect that by 1973 this source of energy will be providing power for 2,000,000 homes.

Difficulties due to equipment failure at the Douglas Point nuclear project on Lake Huron have given rise to much speculation as to the future of Canada's nuclear power program. Our confidence in the heavy-water, natural-uranium power reactor concept remains unshaken. At the same time, the Douglas Point delays do suggest an answer to critics who would have us go all out in this field at the expense of other kinds of generation. There are other reasons, including operating considerations, why this is impractical.

Only last month we decided to take up options on 565 acres of property for construction of yet another thermal-electric giant about 20 miles west of Kingston. Investigations show the





trunks are strewn like so much matchwood around the site of rey Falls power station, north of Thessalon. The area will be flooded year to form the station's headpond. Centennial year saw big les in the adoption of electric heating, these town houses in Toronto's del Village and the St. James Town apartment complex providing two instances. St. James Town will eventually house 15,000 people a 50-acre area and is the biggest electric heating project in Canada. dlighting display was staged in London by a province-roving onstration.

is suitable for a power station in the 2,000,000-kilowatt ge. We still have not reached a final decision as to whether ill burn coal or be nuclear-powered.

k is continuing on the coal-burning projects at eview, near Toronto, and Lambton. Five of Lakeview's ,000-kilowatt units are now in service while the \$218 on Lambton station is due to deliver first power sometime year.

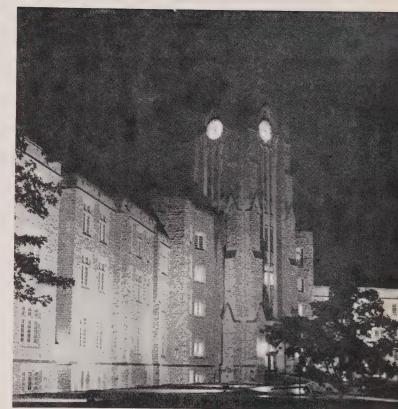
al work has started at our newest fossil-fuelled project at ticoke, on the northern shore of Lake Erie. This year we ect to progress through site grading to laying concrete additions for the powerhouse.

In the province's northland, our policy of developing nomically attractive hydro-electric sites has taken an army of struction workers to the Mississagi River. There they are ding a 130,000-kilowatt plant at Aubrey Falls, 68 miles to of Thessalon. The project is four months behind schedule cause of work stoppages, but hopefully we are still holding the previous planned in-service date — the fall of 1969. The are also planning a new 215,000-kilowatt plant — the service of the same headpond as the existing are W. Rayner power station.

s are in hand to harness another northern site, at Lower th on the Montreal River southeast of Cobalt. And bilitation of the Kakabeka Falls plant near Fort William, ading the building of a new \$1 million dam, is virtually blete.

units at the new Mountain Chute power station on the awaska River in Eastern Ontario started operation in 1967. o-unit extension is scheduled for service this year at ett Chute, a few miles downstream from Mountain Chute. nearer the Madawaska's confluence with the Ottawa r, a two-unit extension to the Stewartville power station see service next year.

Dower network, which covers an area larger than that of ce, is still split into two distinct systems, but this will e for long. These will be joined this fall when a 230,000-ink-up with the Great Lakes Power Corporation will







Visitors file into the Hydro Hall of Memory, opened last spring. More than 82,000 have now seen the Niagara Falls display.

allow the transfer of limited amounts of energy between Northwestern Ontario and the rest of the power grid. A further 330 miles of line will be completed by 1970 to permit a full interchange of power over Hydro-owned lines.

We were pleased to welcome three more communities to the Hydro family of municipalities last year. These were Kenora, Pembroke and the village of Fenelon Falls. They bring the number of utilities receiving power from Ontario Hydro on a cost-contract basis to 355.

The utilities were extremely active last year in gearing themselves for the future. Their awareness of the need to keep on top of technological and political developments was evident in the number and nature of meetings held by their representative organizations, the Ontario Municipal Electric Association and the Association of Municipal Electrical Utilities.

Data processing, lineman training, metering, public relations and government legislation were among the subjects that provoked much discussion and decision-making. The virility and growth of the utilities was also reflected in the number of new office buildings and other facilities opened across the province. Well over 100 utilities have so far adopted the orange and vermilion Hydro in Ontario symbol, which is now a familiar sight to 60 per cent of the province's electrical consumers.

Both the OMEA and AMEU are to be commended for their initiative in establishing a co-ordinating committee on public relations early last year. The committee's task is to develop a continuing program of communications and activity that will encourage mutual understanding between the utilities and the people of Ontario. District committees have since been established by each association to enlist and encourage participation at the local level.

"Tell the People" is the theme of this ambitious program, which deserves the support of electrical utilities throughout the province. Much of the history of the municipal utilities is related in the Hydro Hall of Memory, opened at 'Niagara Falls last February as the joint Centennial project of the OMEA, AMEU and Ontario Hydro. This fascinating display is undergoing continual improvement and has already attracted more than 82,000 visitors.

Sales and marketing continue to be an integral part of the

Hydro operation and while the slim margin of our power reserves over our winter peak demand must inevitably influe our promotion and advertising, we will continue to demonst the merits of electrical energy and to place them effectively before the people. Our marketing program will be aimed at utilizing our generating resources to the optimum advantage 24 hours a day the year round. A great many kilowatt-hours being marketed in the hollows between peaks with a salutal effect on our unit costs. In addition, we must have regard for the huge program of expansion we have underway and constantly in a position to utilize fully this capacity as it comes into service.

Highlight of the year was undoubtedly the introduction of electrical modernization plan. Under the plan, Ontario Hydr is providing loans to help homeowners install such convenier as improved wiring, built-in appliances and electric heating and cooling systems.

Initial results are encouraging. Although in operation only a few months, the plan is now available to more than 1,500,000 residential customers served either by Ontario Hydro, the municipal utilities or private power companies. Some 133 contracts worth a total of \$88,000 have been processed and plan outlined to more than 1,500 contractors across the provi

Electric energy is becoming an increasingly popular choice as a source of heat, and people in more than 55,000 Ontario homes and apartment suites are now enjoying its benefits. One notable apartment complex to be heated electrically w the 6,000-suite St. James Town development, which open Toronto last September. Apart from a number of conversion from other forms of heating, we expect electric heating wi into one out of every four new dwelling units built in 1968.

The municipal utilities co-operated with Ontario Hydro in several sales campaigns, including a three-month promotic electric dehumidifiers and — following successful test markilast year — the sale of a new type of glare-free study lamp.

A travelling display of decorative outside lighting again to the province, visiting among other centres London and Peterborough.

All in all, it's been an exciting and vibrant Centennial year for Canada, although a somewhat troubled one for Ontario H. However, our focus is forward, not backward. We have to construction moving ahead; we have to catch up that lost Even though we are confronted with a number of problem. I have every confidence we can find solutions and can sup the development of our great province. The pace of that development means that Hydro must double its capacity in next eight or nine years. That is not an easy challenge — in fact, it's one to test the talents of us all.



but nickel has so many uses right here on earth that demand is breaking all records.

by Hal O'Neil

as hard as nails, as malleable as mud were it human it would belong to just ut every club and organization going. Iloys will withstand the white heat embrittling sub-zero cold of outerspace el. They are used in the most powerful nets known and in components no e magnetic than wood.

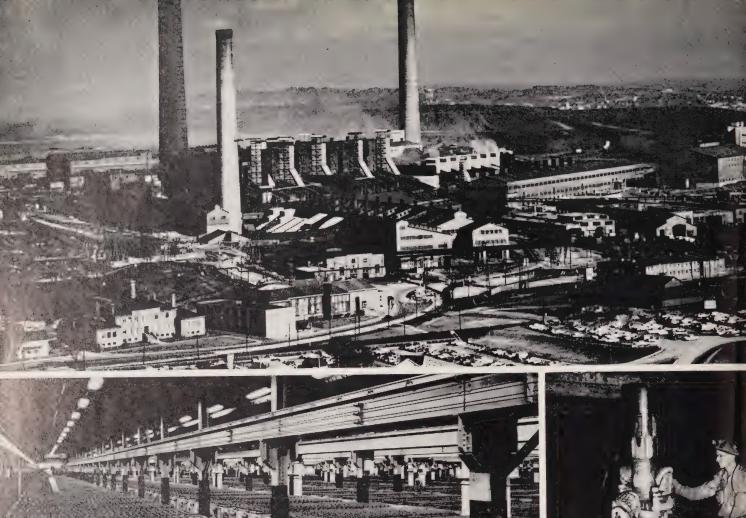
name, of course, is nickel — a hard, are metal once deemed a nuisance and

dubbed "Old Nick's Copper." And for 63 years Canada has been the world's largest producer.

It all began back in Confederation times and all quite by accident. During the building of the transcontinental railroad, blasting near Sudbury, Ontario, revealed what looked like copper deposits. Mines sprang up, but instead of copper, the first ore smelted down contained large amounts of nickel. Although there were a few uses for the metal in those days, it

was still considered a troublemaker because it was difficult to separate from copper.

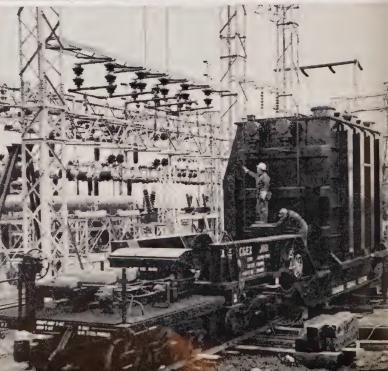
That didn't stop the mine owners in Sudbury, though. They decided to find a way to separate the nickel and develop new uses for it. With government assistance and a generous dosage of pioneer spirit, they succeeded. A separation process called Orford was developed and the idea











ver-hungry nickel producers swallow kilowatts Imost every phase of operations, whether Inco's massive reduction plant with its rows efining tanks, or underground with a threem trackless driller and a machine that cuts a e-foot shaft straight up. Special rail car was d to bring giant 300,000-kva transformer to a at Sudbury.

dding nickel to steel to make a tougher erial was promoted to advantage.

duction early this century looks pale he light of today — just over 10 million ands compared to 468 million in 1966, demands are outstripping even this.

western world's consumption in 6 was around 830 million pounds and United States government was forced lip into its own stockpile. Half the tel produced in Canada goes south of border.

International Nickel Company of hada Ltd. — the world's largest ducer — found itself in the same boat, and to dip into stockpiles for the fourth secutive year. Inco couldn't fill the ers even though it did deliver over of million pounds of the metal. And the dis expected to continue.

re nickel is being used in almost every ntry in the world, with the heavily ustrialized ones leading the way. One of main factors is the boom in the aircraft ustry — military requirements of the ted States are responsible for much of . Nickel for stainless steel far outors any other use — 296 million pounds 966. This alloy is gaining popularity ne construction of everything from muter trains to buildings.

ngs electrical also contain a good centage of nickel. Its alloys are used in manner of generation equipment while lear power stations make extensive of stainless steel and nickel-chromium ys.

nsformers, transistors, contacts, light be lead wires, element sheathing and tronic tubes make use of Old Nick's per in converse ways. Some applicass call for a nickel alloy's electrical stance; others employ a nickel alloy able for its high degree of conductivity.

ting this year, Canadians may get fused by talk of nickel coins. Not only the white metal be found in the ent piece, all the larger denomination is will also be pure nickel. We're not the however. The Chinese had nickel is 2,000 years ago.

n International Nickel and Falconge Nickel Mines, another Canadian lucer at Sudbury, are expanding leet world demands. Inco already has nine mines operating in the Sudbury district and another at Thompson, Manitoba. Seven more will be added within the next two years and, if preliminary exploration work both here and abroad bears fruit, a further seven could open.

Falconbridge has opened an additional mine called Strathcona, which is now in the early production stages. Plans call for opening further facilities this year.

As part of the same program, International Nickel is enlarging its existing mines. A new shaft is being sunk at Creighton mine, which opened near Sudbury in 1900. When completed, it will drop 7,150 feet—the deepest single shaft in the western hemisphere. It's longer than nine Toronto-Dominion Centres. The 21-foot shaft will be sheathed in concrete and the rock excavated from it would fill a train 35 miles long.

Heat will be a critical factor in the mine. Rock temperature will range from 40 degrees at the surface to 110 degrees at the bottom. Nine-and-a-half tons of fresh air will be delivered underground for each ton of ore extracted.

Moving the ore and miners up and down the shaft will be a major accomplishment. Wheels 19 feet in diameter will wind and unwind the steel hoist ropes, each thicker than a man's wrist. Thirteen-ton ore skips will move at 40 m.p.h., while double-deck cages with a 96-passenger capacity will move 10 m.p.h. slower.

Altogether, the new plant will use enough electrical power to light a city of 30,000 people. But that's just a small ripple in the kilowatt-nickel river of progress.

The two nickel producers at present use as much power as Kitchener, Oshawa and Welland combined. But expansion will add a St. Catharines and a Stratford to the list by 1972. Only a few months ago, Inco became the second industrial firm to buy power from Ontario Hydro at 230,000 volts (Lake Ontario Steel at Whitby was the first last spring).

To accommodate the high-voltage supply, the company installed twin transformers at Copper Cliff with a combined capacity of 600,000 kva. The transformers, the biggest ever supplied to a Canadian industry, were built by Canadian General Electric at Guelph. Incoming power is stepped down by the twins to 72,000 volts for distribution to Inco's area plants.

Augmenting the power supplied to International Nickel by Hydro are four generating stations owned by the company. They're located west of Sudbury at Big Eddy, High Falls, Wabageshik and Nairn Falls.

What makes nickel producers such heavy users of electric power? Aside from the obvious things like underground lighting, ventilation and hoists, or Inco's 87 miles of electrified railway, much of the power is used in processing the raw ore.

Following a lump of ore from the time it is blasted from the stope illustrates how much work goes into wrestling pure nickel from the ground. Before being hoisted to the surface, the ore is dumped into crushers to reduce the large lumps for easy handling. Underground transportation is by electrically-driven ore car trains.

On the surface, the chunks of rock are moved to reduction plants by electric railway and crushed again to about one-quarter of an inch, or less. Grinding mills then take over to reduce the ore to the consistency of fine sand.

Separation begins with flotation tanks where the valuable minerals containing 15 elements are floated away from the useless rock. Iron sulphide is the first mineral taken off and moved to a recovery plant where iron ore is the end result. Of the other concentrates one contains most of the nickel; another most of the copper.

The concentrates then go to the smelter where they are roasted to remove about half the sulphur. The nickel calcine is then melted in another furnace and slag skimmed off the molten mass. Iron is removed by feeding the liquid through converters, which add air and a flux to the mixture. Traces of copper, still present at this point, are extracted by controlled cooling followed by grinding and flotation. A final roasting of the nickel concentrate drives off the last of the sulphur.

Next stop for the nickel is the refinery. Here it's melted again to form an impure slab weighing 490 pounds. Impurities are then removed by electrolysis.

And what impurities . . . 14 other elements with names like palladium, rhodium and ruthenium along with platinum and some gold and silver — all found in a valuable sludge at the bottom of the tank. They're collected and shipped to other refineries for production in pure form.

The future for nickel is as bright and shiny as the metal itself. At present over 100,000 people derive their livelihood directly from "Old Nick's Copper" and the number is growing daily. Chances are that almost everyone is within touching distance of nickel in some form or other.

Yes, in Canada, nickel's worth a lot more than five cents. \square

great minds think alike at this bold venture in industrial research

Sprawled across 350 acres of Ontario parkland just west of Toronto is a scientist's dream. It's called Sheridan Park, and here several hundred dedicated researchers hailing anywhere from Clarkson to Taiwan investigate everything from the amount of insecticide on cucumbers to the uses of radioactive isotopes.

But what makes the development unique is its approach to industrial research, usually surrounded by a tight security web. For a Sheridan Park scientist needing help can often get it right on his own doorstep — from one of the eight other organizations doing research there. Of course, it's done in a strictly business-like way.

For example, when Mallory Battery research head Dr. F. J. Kelly was exploring the properties of zinc for a new type of battery, he talked it over with research colleagues at nearby Cominco laboratories. Cominco is one of the country's major zinc producers. Dr. Kelly not only got the information, he got additional data for further development of the battery.

This cross-pollination of ideas is further encouraged by use of a centralized index which lists all skills, equipment and resources at the park. The information is held in trust by Dr. William Campbell, director of the Ontario Research Foundation.

All books in the libraries of each laboratory are also listed in a central index, which in turn is cross-indexed with the National Science Library in Ottawa.

Plans are in hand for a storage centre that will enable scientists at Sheridan to obtain non-security information from similar data centres anywhere in the world.

A tour of Sheridan Park is like a trip into a microcosm of glass beakers, laboratory

animals, towering X-ray machines and testing rigs for nuclear reactor equipme. Here, the efforts of white-smocked researchers are directed toward "building a better mousetrap". For their work is production-oriented. The aim is to discovor perfect products which can reach the consumer as quickly as possible.

On a visit to Sheridan, you might becom acquainted with the following projects:

• The safety-testing of drugs. This is a major activity at Warner-Lambert Research Institute where an electron microscope is used to study the toxic effect of drugs on the liver. The microscope, which magnifies 35,000 times compared to a typical light microscope's 1,000-times magnification, makes possible early detection of any cellular changes.

While highly-bred animals are now used in the experiments, Warner-Lambert scientists are investigating the possibility

the stori

by Harriet Law

Co-operation is often the keynote to success at Sheridan Park. Shown are various phases of research at Atomic Energy of Canada Ltd., Warner-Lambert, Mallory Battery, British American Oil and Cominco.





rowing liver cells in cultures to which ney can directly apply the drugs. This buld lead to dispensing with the use of nimals for experiments.

ew and precise biochemical tests are so being devised to aid in early recognion of cell changes.

The search for a dry cell battery which roduces more current, occupies less pace and maintains its efficiency in sub-cro temperatures. This is beginning to now results at the Mallory Battery Co. of anada Ltd. A Sheridan Park team under r. Kelly has succeeded in building atteries that eventually will make possible e production of D-size batteries about ne-third their present dimensions.

Kelly has set as his target an efficient attery operating at 40 below. "We have most succeeded", he says. "Many types dry batteries stop dead at freezing point.

Canadian applications, in particular, demand batteries that operate at well below freezing."

Uses he has in mind include batteryoperated warning lights for roadconstruction projects, aero-space needs and power equipment for torpedoes and ships' decks. Camera manufacturers will be interested in the smaller high-energy batteries for flash bulbs and movie cameras. The Canadian electronics industry is making heavy demands on battery makers because of the rapidly developing art of integrated circuits complete circuits with electronic components embodied in chips no bigger than a pinhead. The dry cell that Mallory is working on will produce exactly three times as much power as existing D-cells for simple flashlight use.

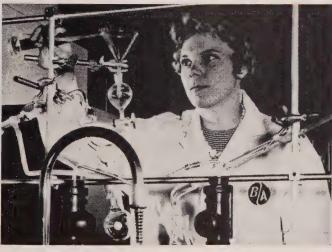
• The development by British American Oil scientists of techniques for attracting and measuring materials such as helium. When BA employees discovered an unusual inert gas during a regular search for oil in the Canadian West, they were surprised to learn on further examination that they had stumbled upon one of the world's largest helium sources. That was in the early sixties.

Since moving into their spacious laboratories at Sheridan Park, BA scientists have continued to work on the problems of extracting the gas. They have also done research into a new line of rubber extender oils. Rubber tires can contain up to 50 per cent oil, most of which is now imported into Canada.

"We are trying to displace the imports by making available a Canadian source of raw material. So our researchers have developed a new line of extender oils," says BA's director of research, Dan Zakiab. Now the company can offer tire manufacturers a made-in-Canada extender









which doesn't alter the properties of the rubber itself.

- At the Dunlop Research Laboratory, the emphasis is on exploratory research involving both the creation of new polymeric materials and their efficient use. Novel plastics, adhesives and coatings all come under the microscope at Dunlop. The company's parking lot has been marked with an experimental sulphur paint. And one section of the laboratory roof is coated with a new synthetic rubber known as EPT, or Ethylene Propylene Terpolymer. Further applications of this synthetic are to be found in belting, hose, roofing, weather stripping and tire sidewalls.
- An aspect of nuclear development being undertaken at the park by Atomic Energy of Canada Ltd. is the designing of a reactor in which ordinary water will do the cooling leaving heavy water to perform its prime function as a moderator.

Heavy water looks, tastes and feels like ordinary water, but has the ability to moderate or slow down neutrons and make a chain reaction possible while using natural uranium fuel.

An ordinary-water-cooled variant of the heavy water, natural uranium approach is being tried at Gentilly, Quebec, in a 250,000-kilowatt plant.

Credit for a central research development must go to the Ontario Research Foundation, which proposed the idea. The ORS complex at Sheridan Park is a "core" which offers other corporate residents as well as non-resident industrial customers the use of some highly specialized skills and equipment.

Besides producing co-operative research, Sheridan Park provides important employment for Canadian scientists who previously sought work outside the country. In fact, there has been talk of Sheridan reversing the "brain drain".

"Once upon a time you had to go to the

US if you wanted to do industrial research," says BA's John Spiro. "Now people are actually moving back here from the States".

The park has all the attractions important to scientists. It is situated close to Toronto's International Airport, to universities, theatres and recreational facilities. And a residential area is growing around Sheridan Park.

The Sheridan Park Association, made up of a member from each property, regular all activities from site approval to where street signs should be placed. It also provides scientific and technical liaison Latest addition to the park is an administrative-shopping centre completincluding convention facilities, a beaut shop, barber's shop, bank and cafeteria

By 1970 there will be an estimated 6,00 scientists and technicians at Sheridan Park with an annual payroll of \$42 milli



and as the community enters its fourth ear of operation, it does so with a rowing reputation for scientific reakthroughs.

ceeping he kilowatts coming

cientists can always put on an extra weater if the heat fails in the laboratory. ut what happens if there's a power reak during a prolonged experiment which spends upon 18 air changes to keep test himals bacteria-free? When this happened Warner-Lambert's laboratory at peridan Park, Mississauga Hydro agineers worked around the clock to tup auxiliary power and repair the terruption.

hile an adequate power supply is sential for the research centre, it is also vital concern to the Mississauga

utility — supplier of power to Sheridan Park's nine laboratories.

Initial teething problems have been overcome and the utility ensures a constant electrical supply at all times with two independent feeder lines. Dual underground supply is distributed to individual research buildings at 13,800 volts. This constitutes a considerable saving for Sheridan Park consumers, as normal regulations request industrial consumers to own sub-stations to step down the power from 27,600 volts.

Each organization at Sheridan Park was asked to install an automatic throw-over switch so that, in case of an interruption, the power supply would continue from another source. To meet the growing need for power at the park, Mississauga Hydro is now installing its third transformer and is expected to add a fourth. Then consumers will be split into two

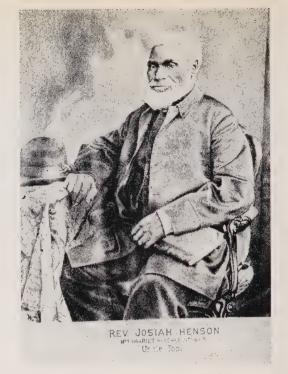
groups, each group receiving power from two transformers.

Despite all precautions, there are times in the power business when nature precipitates a crisis. Last winter, when the power supply was interrupted to the Sheridan research centre, Hydro personnel were out at the Warner-Lambert laboratory at 6 a.m. and worked until midnight correcting the fault and setting up portable generating units to keep the animals warm. Without heat quite a few animals would have died and months of research been wasted.

Spacious layout of the Sheridan Park research community is evident from the air. Individual buildings are characterized by their distinctive architecture. On the left are those of the Abitibi Paper Co. and Dunlop, below the imposing approach to the British American Oil laboratories.







The Rev. Josiah Henson, on whose life the book "Uncle Tom's Cabin" was based. Right: the home established by Henson at Dresden, Ont., after his escape from slavery.

uncle tom lived here

by Alistair Thoms

Black Power leaders use "Uncle Tom" as an expression of contempt and rouse the mobs with the cry, "Burn baby, burn." But Josiah Henson, the model for Harriet Beecher Stowe's Uncle Tom, would probably have cried, "Build baby, build."

The real life Uncle Tom left his name etched into the history of Dresden - a small town in southwestern Ontario. It was here in 1841 that he established a colony for runaway American slaves, teaching and working with them. Before he finished, thousands of American negroes had passed through his settlement.

Today at Dresden, Uncle Tom's Cabin and Museum are part of an historic site marked by a blue and bronze provincial plague. The site includes such period items as Henson's home, a home for freed slaves, the pulpit from his church and slave whips and shackles. There are about 200 negroes among Dresden's 2,400 population and several of his descendants still live there.

On October 8, 1830, when Henson first saw the autumn sun rise over Upper Canada, he could not imagine that nearly

half a century later he would meet the Queen of England.

But in 1876 he was received by Queen Victoria at Windsor Castle. At the time, the Queen is reputed to have said: "Mr. Henson, I expected to see a very old man, but I am delighted to see such a well preserved, good looking man as you are." "My sovereign," Josiah replied, touching his hand to his forehead, "that is what all the ladies sav.'

When he met Queen Victoria, his work was almost finished — he was an old man come to receive the supreme accolade for his efforts.

During his lifetime he had been a world traveller. And although he was illiterate until late in life, he lectured at universities to raise money for the British American Institute — his colony. In the early 1850s he went to England seeking markets for the institute's products and actually had them displayed at Crystal Palace.

Many times he risked his life travelling to slave states and bringing back fugitives.

It was on one of these trips he met Mr Stowe. From the meeting she acquired much of the information for "Uncle Tc" Cabin" — since translated into 37 languages.

On behalf of the institute, Henson purchased 200 acres of walnut and to wood trees, then set up a sawmill, a blacksmith's shop, a grist-mill and a carpenter's shop to make the colony self-sufficient. He built a vocational scl of to teach trades and domestic duties and the handiwork of the school's woo carvers and carpenters can still be seer

He lived like a Conradesque anti-hero, yet differently because he met every opportunity head on.

Born into slavery on Francis Newman farm in Maryland, Henson's earliest mer was of a brutal overseer beating his father. The overseer had assaulted Henson's mother. For defending her, I father was nailed to a tree by his ear, lashed 100 times and cut down by he h his ear sliced off.

From his own recollections, Josiah w beaten, abused and tricked by the wh



ss. One of his masters, Isaac Riley, was a reller who enjoyed a fight in the local rern on Saturday night. Josiah, takening for protection, usually had to take it up to save his master from a pating.

ce an overseer who had been involved such a scuffle later ambushed Henson, ashed his teeth and broke his shoulder des with a fence rail.

hen Isaac Riley's creditors threatened Geize his assets, he sent Henson to other Amos Riley's farm in Kentucky. arrived there in April, 1825.

biography says: "I delivered myself my companions (wife, two children II 19 other slaves) to . . . the brother of owner who had a large plantation wh 80 to 100 negroes . . . there I remained three years . . . availed myself of all prortunities for improvement . . . and we admitted as a preacher by a Conference the Methodist Episcopal Church."

on all his slaves be sold except Henson,

who was to return to Maryland with the auction receipts. On route, Henson preached and begged funds to buy his freedom. He passed through the free state of Ohio and could have stayed there, but decided the honorable act was to buy his release. (American fugitive slave laws were very severe and, considering Henson was carrying Riley's money, his morality was probably reinforced by stark knowledge of the punishment in such cases.)

He raised \$245 toward his freedom, but Isaac Riley tricked him and sent him back to Kentucky, still a slave who had merely made a downpayment on his release.

Time passed, then on a trip to New Orleans Henson saved Amos Riley's son from death. He hoped his master's gratitude would mean his freedom. No such luck. Now thoroughly disillusioned, he looked for a chance to escape.

His opportunity came in September, 1830. Late one moonless night, another slave rowed Henson, his wife and children across the dark Ohio River to Indiana.

After two weeks of travelling by night,

they reached Ohio and the headquarters of an underground movement funnelling escaped slaves to Canada.

Descendants of Amos Riley, living today near Owensboro, Kentucky, are skeptical of Henson's story. They'll admit he lived there and he did run away one night, but they say it was over matters more amorous. According to Mrs. Sue Hawes, Riley's great granddaughter, Henson's wandering eye with the ladies riled the other negroes.

"Uncle Tom ran away because he got too familiar with the other slaves' wives and they were going to kill him," she says. And she remembers her grandmother telling her that Tom was a "tall, intelligent fellow with a weakness for women."

Whatever the reason for his escape, he did reach Upper Canada. And when he got there his luck improved. He is remembered, among his other exploits, for organizing the colored people in Colchester to defend Fort Malden during the Upper Canada Rebellion. Soon after, with the help of a New York Quaker, James Fuller,

TO BE SOLD, BLACK WOMAN, named PEGGY, aged about forty years; and a Black boy her fon, named JUPITER, aged about fifteen years, both of them the property of the Subscriber.

The Woman is a tolerable Cook and washer woman and perfectly understands making Soap and Candles.

The Boy is tall and strong of his age, and has been employed in Country business, but brought up principally as a House Servant-They are each of them Servants for life. The Price for the Wowan is one hundred and fifty Dollars—for the Boy two hundred Dollars, payable in three years with Interest from the day of Sale and to be properly fecured by Bond &c .-But one fourth less will be taken in ready Money.

PETER RUSSELL.

York, Feb. 10th 1806.









Advertisement appeared in a Canadian newspaper early last century. Leg irons and other instruments of slavery are exhibited at Dresden not far from the graveyard where Henson is buried. Also shown are Dresden residents Don Campbell, 72, and 16-year-old Bradley Lambkin. Mr. Campbell's grandfather lived near Henson's settlement. Bradley, holding a photograph of his older brother, is Henson's great, great grandson.

he set up his institute at Dresden. And for a time the settlement flourished as the fugitives arrived.

But the American Civil War spelled the beginning of the end for the institute. The guns of the Confederacy, blasting Fort Sumpter, were followed by Sherman's march to the sea — ending black bondage in America. When the last Confederate bugle was silent and the last rebel flag lay in the dust, Henson's dream faltered and fell, too. War's end meant many of the slaves could go home to the United States and the colony began to dwindle.

A few years later, during one of his trips to England, the colony's sawmill was destroyed in a labor dispute. No bossworker situation is complete without the management side, and as the workers were burning the mill to the ground the manager ran off with the readily portable

In 1871 the final blow came — the institute went into bankruptcy and the property went to auction.

Compared with the excitement and exploits of slave-trade refugees, Dresden has slumbered peacefully over the intervening years. It was, in fact, a mere stripling of a settlement when Henson's institute passed into oblivion. At that time it also went under the name of

But Dresden '68 is beginning to swing. While still a small rural community it maintains two newspapers, a number of flourishing clubs and service organizations and modern stores. Local industry is growing fast; the fall fair is acknowledged one of the area's best.

Before he died, Henson returned to the old farm in Maryland. The place was in a state of ruin. The fields hadn't been worked in years and weeds covered the earth

where there had been long rows of co-The fences were broken and the build fallen down, Isaac Riley had passed on but his widow remained.

"Si," she said when she saw Henson, "vou are dressed like a gentleman."

"Ma'am," Henson returned softly, "I always was."



ormula for success

n a small electrical utility find success in middle of natural gas country?

esden Utilities Commission manager and Bridle thinks so and recites a time-ted formula — hard work, service and and public relations — as the source of the utility's success.

ord work appears to be no stranger. It on the job, Mr. Bridle knelt to adjust a phlight outside the new, all-electric photon Kent Composite School, his liven shoes slowly sinking into the post-instruction ooze and a gentle rain rung off his white hard hat. He grinned Il said: "There's not enough office work seep me busy — I'm kind of a manager hvorking clothes."

the service and public relations of the formula works, too — if the pird is an indicator. The town's comcite school went all-electric in spite of ty opposition. And in the last two so the town has added 23 electrically-electric water cores. Currently an 18-home all-electric division is under construction.

Later, as he brushed the mud from his trousers, Mr. Bridle said that the likelihood of more industry moving to Dresden had prompted the utility to build a \$25,000 substation in 1967. Already, the miniature building boom which hit Dresden last year is greater than the town's total construction for the previous decade.

How does Dresden's utility handle the new customers? Well, as they don't have a regular salesman all the employees pitch in to promote electric power.

Their sales technique must be pretty good for the gas people have moved in a full-time salesman. Two big factors in Mr. Bridle's success are the utility-sponsored electric water heater subsidy and the low capital investment needed for electric heating. His own new home also helps sell customers on electric heating.

Today the eight-member utility staff serves 869 residential, 68 commercial and 23 industrial customers. So when they ask "What's a nice little utility doing in a place like this?" Fred Bridle is waiting with the answer — "Outselling the gas company on its own ground."



Interior of Henson's Dresden home permits visitors to step back a century in time; in contemporary Dresden utility manager Fred Bridle must continually eye the future.

All segments of the electrical industry represented at Toronto conference





in league with progress

instant answers

One of the latest aids to the electric heating industry is a briefcase-size computer that does on-the-spot heat-loss calculations and tells a customer how much his annual heating bill will be.

Information such as a home's floor and wall area are fed into the machine, which comes up with a dollars and kilowatts answer in less than 60 seconds.

"Contractors normally have to take the information away with them and it's two or three days before the customer receives the answer. This way he gets it on the spot," said an official of the Electrical Contractors Association of Ontario, demonstrators of the machine at the Toronto conference of the Ontario Electrical League.

The computer instantaneously demonstrates the difference in heating costs occasioned by proper insulation or storm windows. It was developed by the U.S. Electric Heating Association and is at present being tested by Ontario Hydro as a sales aid in customer contracts.

Nearly 800 delegates drawn from On-

tario, Quebec and Newfoundland attended the one-day conference, which embraced all segments of the Canadian electrical industry from manufacturers and distributors to contractors and utilities. Thirty-eight exhibitors displayed the best of their products ranging from furnaces and airconditioning equipment to insulation material and switchgear.

The conference was the second sponsored by the Ontario Electrical League, an organization born from the marriage last year of the Electric Heating Association and the Electric Service League of Ontario.

lasers in the kitchen

What's ahead for the kitchen of tomorrow? Joining the growing ranks of those who dare predict the future, C. F. Wood, a General Electric Company executive from Louisville, Kentucky, forecasts laser beams that disintegrate the garbage and countertop cooking elements of material now used in missile nose cones.

Addressing the Ontario Electrical League delegates, Mr. Wood said the oven of the future would retract into the kitchen counter when not in use. Much of the meal would be cooked on the counter-top itself, pots and pans resting on a glass-like material developed primarily for missiles.

"The use of thermal shock-resistant ceramic as a counter-top cooking element will provide all the convenience of today's surface units while set flush and blending with the counter-top. The result: an uncluttered, useful counter, easy to clean and wonderful to cook on."

Mr. Wood said the laser beam might well

make its debut in the home as a disp of garbage. "It won't grind, it won't muit won't burn in the sense we thin burning. It will simply, utterly and a lutely disintegrate any substance plin its path. Ten years? Probably not. possibly within twenty."

On the subject of refrigerators, Mr. V said that a decade from now the fipreserving appliance would probably be square and cold. Freeze-dry processwere not expected to make deep introviting that time, although some inertatoxic gas might be employed to pressfruit and vegetables for comparatively periods.

He warned housewives that the takeeping a home in 1997 would probe just as dull and boring as it is to "There may be less work or easier vibut it's still going to be work."

Because of the long life of equip and the testing to which new equip was subjected before appearing in stores, home appliances would probe remain 10 years behind existing technology.

"Manufacturers are dedicated thorough, time-consuming testing of is first in their laboratories for a periodyears then in controlled field condition of the type of type of the type of the type of ty

"We're serious enough about the sacrifice what might be a competicular coup to assure ourselves that these ances work — work well," Mr. \ added. "That is why our washer cus hows up only once in nine years cause it's taken that long for her was













Top speakers and a wide range of displays drew nearly 800 delegates to the Toronto OEL conference. J. E. Wincott, Niagara Falls Hydro, and Bill Masson, Canada Wire and Cable, are shown examining one of the exhibits. Demonstrating heat-loss computer to Bill Swinnerton, president of Atlas Electric, is Norman W. Purdy, executive vice-president of the Electrical Contractors Association of Ontario.

gin to whine a bit about the day-in, y-out service it's been giving."

m streamlining

d tape must be eliminated from Ontario dro's Electrical Modernization plan bethe scheme can realize its full potential. This was the unanimous verdict of a see-man panel at the Ontario Electrical ague conference. The plan, which was reiled at the previous year's OEL meetputs electrical modernization within the choof most Ontario homeowners. It has an hailed as a venture of major significate to the electrical industry.

one of the panel members, W. E. vards, chairman of Sudbury Hydro, said toustomers had too long a wait been being told the cost of modernization receiving approval under the associated dit plan.

think this is a big market and we are exploiting it to its full advantage," he

"The risk is low and is built into the lit charges. We must get a more streamd credit plan for more success."

ectrical contractor K. N. Rumble agreed paperwork must be kept to a minimum. A have to get an early closing for a sale with the smaller jobs a contractor pain't have the time to make three or calls."

Shin Daniel, of Scarborough PUC, said stillity had experienced some growing with the plan. "I have to agree that sperwork is unwieldy, although I am that steps are being taken to improve

/e at the electrical utility level have a more forms and steps after you have

submitted your portions," he told delegates. "This has also been recognized and an attempt is being made to cut down on the number of forms required."

Sales, Debt and Climate Control

Commenting on the new Consumer Protection Act, A. R. Walker, of the Ontario Department of Financial and Commercial Affairs, asked for leadership in regard to sales and moral conduct.

"How many of you have been tempted into something by someone who really hypnotized you with a glib sales approach?" he asked. "But what about the consumer who has no idea what credit is all about?

"We have got to get down to the grade nine school level. In the first years these people get so badly in debt that they are ruined for the rest of their lives."

Mr. Walker said that many people thought they should have three or four loans to keep up with the Joneses. "We must literally owe everybody and own nothing to have status in our society." But he complimented delegates on the record of the electrical industry.

"We have had no complaints about electrical contractors and I say this is wonderful. I suggest that you keep this up. It indicates to me your type of business and the ethics that you practise."

D. R. Wheeler, president of the National Warm Air Heating and Air Conditioning Association of Canada, warned the industry it must be prepared to sell customers all the ingredients of environmental control — heating, air conditioning, humidification and air cleaning — in any order and at the most economical price.

"I am afraid that if we do not begin this approach, we will be doing our customers a real disservice," he said.

In a challenging address, Charles Hoffman, a member of Waterloo University's planning committee on sales training and manager of the Niagara International Centre at Niagara Falls, stressed the importance in life of correct attitudes.

Among his major thoughts:

SUCCESS: To be successful at anything, we start by forgetting the past. Why think about the past when the future has such tremendous potential? The only part of the past we must remember is our mistakes, so that we don't make them again.

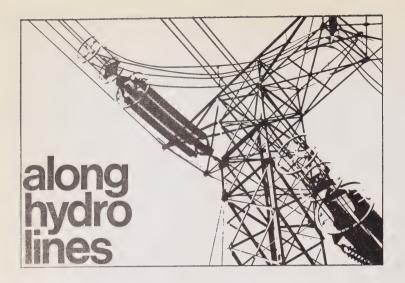
NOTES: A man cannot exist today and get ahead without making notes.

LISTENING: To intelligently handle people you have got to be a good listener. But you teach yourself to cut people off at the right time.

THE COMPANY: If you don't have a belief in your company get out. You are a coward. Why stay somewhere if you are not happy? Just before you leave take another look at yourself. Somewhere, something is wrong with your attitude.

ARGUMENTS: Don't argue with people. Anybody with a bit of intelligence and the gift of the gab can win an argument. But show me a man who turns it into a discussion and there is a man with brains.

IMMIGRANTS: This country is not going anywhere without millions of new Canadians. We have got to have them. But we have also got to understand the ones that are already here. There is nothing wrong with foreigners. The only bad habit I've found is that they work hard. And we are desperately trying to change them.



New president



Ontario Hydro's Western Region manager Gordon M. McHenry has been elected president of the 25,000-member Association of Professional Engineers of Ontario. The association serves as the provincial licensing body for the engineering profession.

Mr. McHenry was born in Toronto and graduated in electrical engineering from U of T. During the last war he served with

the RCEME as a radar officer. He joined Ontario Hydro in 1948 and assumed his present position in London in 1964.

One of Mr. McHenry's main concerns is that the engineering profession continue to develop to meet the needs of a rapidly changing environment. He sees this transition leading to an increased emphasis on continuing education to keep abreast of the knowledge explosion. He also foresees a greater need for longrange planning and an increase in the social responsibilities of the profession.

Computer heartbeat

In this era of electronic revolution a utility's business information system will become the heart of its operations, Charles Kew, London PUC, told an AMEU administrators' workshop in Toronto last month.

Mr. Kew, chairman of the AMEU's finance and office administration board, summed up a day-long workshop in the Royal York Hotel which dealt with such areas as office unions, manpower resources and data processing. Representatives of 40 major utilities attended.

Mr. Kew noted that a number of utilities, including London, are using or preparing to use computers, that the telephone has become a business data machine and that banking is heading toward a "chequeless society"

Office administrators of the future, he said, will be faced with new situations, new equipment and the need for a great deal more training. Technological advance should be welcomed because machines would take over routine office work and free administrators for creative tasks.

Earlier William Cooper, Hamilton Hydro billing and collections manager, presented a report of the AMEU data processing committee, formed to prepare a guide for utilities using computers or considering them. It will attempt to keep them abreast of developments in this rapidly-changing field.

Mr. Cooper cautioned that the use of a computer was not always the answer. He said utilities could improve efficiency and

output by using faster electro-mechanical equipment and necessarily converting to a computer. "It is wise to fully inv gate all avenues before making a change of system," he said.

The AMEU guide to computers will cover major areas suc feasibility studies, cost, physical facilities, choice of m facturer, personnel selection and training and liaison bety data processing staff and management. It will also outli model unit record installation now used by many utilities possible step toward computers.

Del Pipher, North York Hydro's machine accountant, out problems and procedures over an 18-month period in connection with his utility's installation of an IBM 360 card computer said North York solved many problems in advance by holdi series of staff seminars. At the same time they achieved a s of employee participation.

Mississauga it is!

Residents of Toronto Township last month voted overwhelm to rename the municipality the Town of Mississauga. But though it will be the nation's largest town with a population 105,000 scattered over a 103-square-mile area, the Post (Department refuses to recognize it.

Instead, the department plans to carry on the existing p districts of Port Credit, Cooksville, Clarkson, Malton and Bri ton. The local council had proposed the new name with s postal districts.

Council gave residents the choice of voting for Mississau Sheridan as the new name. The idea of the change was establish an identity separate from the surrounding commu and to eliminate the confusion between Toronto Township the City of Toronto.

Teamed up again



A thinker's lamp

It wasn't really a surprise when Sudbury voters re-elected Edwards and Ted Dash as Hydro commissioners . . . it's sixth consecutive term as a team.

Mr. Dash, a retired International Nickel official who enjoys being a "full-time" commissioner, has already 13 yes his credit, seven of these as chairman. Mr. Edwards, mana Cochrane-Dunlop Hardware, has served for nine years, f them as chairman. In addition, Mr. Dash is a former preside the Ontario Municipal Electric Association and the Norta Municipal Electric Association. The third member of the col sion, newly-elected Mayor Joseph Fabbro, is no stranger local Hydro, either. As mayor, he served on the commission 1956 to 1960 and again in 1964-65.

Winners of a recent Hydro-sponsored contest Mrs. I. V o stock, Mrs. P. J. Poland and Mrs. D. L. Laplante are seen rec

college study lamps as prizes from Mr. Dash.

f to Europe



's for tea?

pean Hydro Chairman Harry Hargreaves was guest of honor recent farewell dinner. He is leaving the township to live in erne, where he has been appointed managing director of a last firm.

mong the 150 guests were Richard Bell, MP for Carleton; Erskine Johnston, MPP for Carleton; A. M. Pedersen, manner of Ontario Hydro's Eastern Region and Reeve Aubreyodie, of Nepean Township. Each paid tribute to Mr. Haraves' work, which led to the eventual purchase of the towns's electrical system from Ontario Hydro.

reply, Mr. Hargreaves recalled some of the highlights of his en years of association with the municipal council and hydro em. He mentioned that the population had grown from 3,000 sons when he first moved to Nepean to more than 50,000 average.

Ir. Hargreaves, who was expected to leave for Europe this ofth, is shown with his three daughters being presented with (tby J. Cotterill (right), member of the Nepean commission.

rthern lights

another northern community is receiving power from Ontario ro with the completion of a 25-mile transmission line to yet, about 70 miles southwest of Timmins. The project was e feasible when power was introduced to a new asbestos in the area. Until now, about 100 customers in Foleyet have supplied by a diesel-electric system owned by a local ent.

ith report lambasted

mmendations of the Ontario Comte on Taxation "attack the very basis ydro" both at the municipal and proal level, Dr. Robert H. Hay, pastdent of the OMEA, said recently.

seaking at an AMEU administrators' shop in Toronto, he said, "careful ling of the recommendations shows in attitude and in approach . . . the Committee was basically hostile to whole Hydro concept . . "



Dr. R. H. Hay

three-volume report, prepared by a five-member comheaded by chartered accountant Lancelot J. Smith, hins more than 350 recommendations, including a number would directly affect Ontario Hydro and the municipal c) systems.

Hay said it "ought to be required reading for every commisand every senior utility administrator in this province." He urged managers and senior utility administrators to help commissioners "ensure that we maintain the Hydro concept as a living, dynamic one fit to survive and to go forward into the future."

Dr. Hay, who stressed he was speaking as a member of Kingston PUC, said that commissioners needed help in understanding utility operations so they could make intelligent policy decisions and solve everyday public and customer relations problems.

Noting that an elected commissioner can stay in office only if the people re-elect him, he criticized any tendency to keep utility matters secret. "We must never let public opinion be eliminated as a factor in the determination of public policy nor let the public be so poorly informed that its opinion may lead to the wrong policy."

He urged utility managers to supply commissioners with well-prepared news releases on important matters and concise, clear reports which could be used by newspaper reporters. In dealing with customers, he urged utilities to determine whether or not their policies were fair, reasonable and likely to cultivate good public relations.

Dr. Hay, himself a member of the Association of Professional Engineers of Ontario, referred to the "peculiar genius of the engineer" and said the simplest and most direct engineering solution to the problem of supplying electric service to residential and business communities often wasn't the best solution.

Earlier, OMEA president Dr. J. D. Fleming, of Dundas, urged PUC managers to support the recently launched public relations program and foster its development in "our common interest".

Subterranean look



One place to unwind

Port Credit PUC's program of burying distribution cable is plowing right along. The plan, originally devised in 1963, will see all the system underground by 1985.

Last fall, work was concentrated on a half-mile stretch of the town's main street — Lakeshore Road — which has been widened to four lanes. Both electric and telephone cables were placed underground. Looking over the backfilling of a trench are lineman Ken Griffin, PUC manager Bill Munden, commissioners Ron Brogna and Mayor T. E. McCollum and foreman Alex Dool.

Estimates in 1963 pegged the total cost of going underground at \$2.5 million. The program was spread over a long term so that it could be paid for out of current revenue. So far, this has been achieved and the project has remained on schedule.

Take eight for safety

Safety will be the theme of eight seminars being organized across the province this year by the Electrical Utilities Safety Association. Presentations will cover such topics as "what's new in safety?" "belting safety," "back injuries," and "resuscitation." Opinions will be expressed in a panel discussion at each seminar while the latest in safety equipment and protection devices will be on display.

Similar meetings have been held throughout Ontario for a number of years. Nearly 1,000 people attended EUSA seminars

in 1967, most of them from the electrical utilities.

This year's seminars will be held at New Liskeard on February 23, Sudbury and Sault Ste Marie on February 27 and 29 respectively, London on March 11 and 12, Windsor on March 14 and 15, Smith's Falls, March 19 and 20, Toronto on March 27 and 28, and wind up at Fort William on April 25.

Smith's right after all

Smiths Falls is a mistake that has been going on for about 40 years. Or so says the Ontario Municipal Board. It should be Smith's Falls.

The missing apostrophe came to light when the town council requested permission to issue debentures totalling \$400,000 to assist in the renovation of two hospitals. The board told Smith's Falls the money couldn't be issued until the name of the town was correctly spelled, and that the apostrophe must be used on all official documents "without question".

Council were under the impression that the name was altered in the late 1920s by a special provincial Act, but there isn't any record of it. The change to the apostrophe was authorized by council.

municipal briefs

Thirty Kingston PUC linemen and bus drivers played Santa Claus to the city when they learned that downtown merchants didn't have enough in the kitty to put up lights and decorations on Princess Street. The group banded together and, with commission ladders and trucks, worked for nothing all one Sunday and part of another in stringing lights their Chamber of Commerce had on hand.

Picton Utilities Commission received a public "thank you" last month from a local shoe company after a truck accidentally backed into the firm's transformers. The utility managed to secure replacements within a short time and restore the power supply. "Their efforts on our behalf went beyond the call of duty and we feel that our appreciation should be a public one to give proper recognition where it is due," said plant manager Dennis Kent in an advertisement in the Picton Gazette.

Personnel from nearly 100 municipal utilities have received identification cards since the start of this Ontario Hydro service last May. Total number of cards issued tops 3,000.

Electors at Bowmanville have turned thumbs down on a proposal to change responsibility for water and sewers from the PUC to town council. Coupled with the regular election of mayor, reeve, deputy reeve and councillors, the proposal was defeated by 1,228 votes to 1,124.

Reporting to a general town meeting, Dresden PUC said that consumption has jumped 50 per cent in the last two years. In part, the report said: "If we can continue to sell more hydro each year, it will help raise money to offset maintenance and purchasing costs thereby keeping hydro rates at the same level." Some of the increased consumption was attributed to the construction of 23 all-electric dwellings and the opening of an all-electric composite school.

David Rolston, manager of Goderich PUC, was featured in a recent series in the Goderich Signal-Star designed to acquaint

readers with the non-elected town administrators. Formerly manager of utilities at Durham and Strathroy, Mr. Rolston been at Goderich since 1965. He started in the electrical busi with Ontario Hydro, working on both line and survey crews for years before moving to Durham as manager in 1953.

The high cost of borrowing has caught up with Simcoe F forcing them to postpone construction of a new office build Plans call for a two-storey building on recently purch property, and the remodelling of a structure already there meter shop. No future construction date has been set. Meanwa shift of the meter shop in the existing building has relicongestion.

Silver bells rang for the second time in the Borough of with the presentation of quarter-century awards to three H system employees — Marion Stone, Jack Lindsay and Smith. The first quarter-century celebration in 1966 hon the system's 25-year existence.

Gus Boussey has become manager of Clinton PUC. He me from nearby Seaforth PUC where he had worked for 19 y

the last nine as manager.

Turned-on and beamed-in aptly describes Fort William's city hall. At a recent public ceremony, the new building and cenotaph were floodlit as the local Hydro's Centennial propositional Electrical Day will be held in London, Ontario-Adam Beck's adopted city — on February 13 as part of the an National Electrical Week activities. The local Electric Leagu co-operation with the Canadian Electrical Manufacturers' Assistion, is planning week-long events which will be highlig by a luncheon on the thirteenth. Guest speaker will be CElpresident, Ralph M. Barford.

It wasn't as twinkly a Christmas in the Sault Ste. Marie area might have been. The Great Lakes Power Company, w supplies the area, asked residents to switch off seasonal ligl until after 8 p.m. to avoid restricted service. Low rainfall reduced the company's storage water for power productic 45 per cent of normal. W. H. Hogg, president of Great Lakes water conditions were equal to the worst in the comp 52-year history.

Dump N-waste in ocean

Experiments last summer resulted in 11,000 tons of solid ractive waste being dumped in the eastern Atlantic, says European Nuclear Energy Agency. Containers of waste may from nuclear plants in Britain, France, West Germany, Belgium the Netherlands were dropped into 16,400 feet of water.

Several years of study have shown that the dumping we represent no risk either to man or marine organisms, say agency's annual report. Spent fuel from Ontario's nuclear per can be stored on-site in large water-filled bays of reinforcements. However, a market may develop for the waste, vecontains plutonium.

November energy production

Primary energy provided by Ontario Hydro in Novembe totalled 4.64 billion kilowatt-hours, an increase of 8.1

per cent over the same month a year ago.

For the first 11 months of 1967, the total is 46.48 billion kilowatt-hours, up 7.0 per cent over the same period last year. Adjusted for seasonal influences primary energy demand in November was 4.48 billior kilowatt-hours, 2.7 per cent more than the previous month.

The seasonally adjusted total for November represents 53.80 billion kilowatt-hours at annual rates. This is 386.77 per cent of the energy demand in 1949.



daving bah-humbugged our way more or less uccessfully through another festive season, it's time to settle down, pull up the socks, plant the eet firmly on the ground, position the proboscis to the grindstone and the shoulder to the wheel. In short, it's time once again to assess the future and if the aforementioned callisthenics sound like in addendum to the 5BX plan, they're really othing compared to the mental gymnastics this writer goes through in acquainting readers with what to expect in the months and years ahead.

It's a grave responsibility and we can only bersevere by bearing in mind the growing multipudes who refuse to make a move, business or bersonal, without hearing what our January olumn has to offer in the way of prognosticators. This year's bag is mixed at best and some redownright discouraging.

First, a word of advice—take a good look round you at the dear faces of loved ones and ssociates while you have the chance. If the ollution pundits are anywhere near the mark, nany of us won't be around at the next roll-call and those that do manage to hiccup a "here" re likely to be drunkards.

Speaking at a recent conference on pollution ontrol, one eminent professor opined that dirty r is driving us to drink. Unable to enjoy outdoor ralks because of foul air assaulting the nostrils, reasons, many of us may be turning to more assive sports such as elbow-bending.

If his point is valid, it's fraught with significance. ould dirty air, wafting over Rome from the ly's giant thermal-electric plants, have been e real villain behind the decline and fall of the pman Empire? Certainly drink and a precupation with other indoor debaucheries were ought to be factors.

But the sot-snoot-soot relationship won't fally matter if one professor from down Rio by is right. He warns that unless the world's air Illution problems are resolved by the year 2,000, earth's temperature will have risen enough to filt the polar ice caps and submerge our great castal cities. Carbonic gas is the culprit in the year.

Another pollution expert, this one from Los geles, is less optimistic. He predicts man will t snuffed out entirely within 2,000 years if plution continues at its present rate. As he sees it we'll all be gasping our last due to a declining oxygen supply occasioned by chemical reactions having to do with the sun.

■ Closer to home, some experts envision the big danger as stemming from quite another source. Agricultural scientists are viewing our mushrooming mountains of manure with alarm and intend to keep a close eye on the tail ends of our livestock and poultry. They estimate the output of waste from all livestock production in Ontario at 33 million tons annually and suggest that the volume of animal excrement in the southern part of the province alone is equal to the pollution-causing wastes of a human population of 45 million people.

While they don't spell it out, a few simple flips of the abacus are enough to reveal the peril. By the year 2000 we'll be up to our noses in attar of roses. No wonder they're in such a flap.

But all is not necessarily lost. In warning against air pollution hysteria, one authority recently suggested that there were as many nuts in the air as cinders. "Air pollution is a field which contains more cranks and psychopaths...than any other field I could have stumbled upon," said Dr. Patrick Lawther, director of air pollution research for the Medical Research Council of Great Britain.

So where do we really stand? It's hard to say but we'll have to get a wiggle on before the salt water starts lapping at our foundations, the air disappears or we're done in by dung.

■ On the scientific front, one of the year's more significant developments is undoubtedly the people-sniffer. Employing an electronic process based on the fact that the human skin gives off gaseous chemicals, the device is being used by U.S. troops in Vietnam to sniff out the Viet Cong.

Granted, the people-sniffer may have limited peace-time application. But it's meaningful in that it suggests the extent to which the scientific, electro-technical approach to problem-solving has taken over. A decade or two ago a less expensive and equally effective psychophilosophical solution would have been found. For example, plane-loads of canned beans dropped behind enemy lines would serve the same purpose, forcing the enemy to reveal his presence both audibly and olfactorily.

■ Speaking of beans, they are involved in another important advance in the field of electrical technology. Scientists have established that bean plants send out weak electrical currents in the process of establishing roots. Admittedly, the output is small, about 100 billion bean roots being needed to light a 100-watt bulb, but the technique is new and improvements may be anticipated. The speckled butterbean is thought to be superior to the lima or navy varieties for this purpose, but don't expect to hook up the back garden to the electrical supply for a few years yet. Eventually, though, farmers will be harvesting up to 15 kilowatts per acre with chili con carni as a lucrative by-product.

Other scientists are probing the possibility of harnessing the electricity produced by living cells in rubbish — a dissolved sugar cube being reputed to give off enough electricity to power a transistor radio for two months. And the City of New York is proposing to generate power from plants burning garbage.

If garbage power really is on the move it's going to call on all of our resources as image

builders. Compared with the more conventional association of electric power with nuclear science and falling water, egg shells and coffee grounds shape up rather badly. We'll have to drop the word CLEAN out of those Hydro ads and settle for safe and modern.

■ Another power source with great potential, which has been largely overlooked, is people. Some time ago in this column we mentioned the army's concern over static electricity generated in the under-clothing worn by its personnel. Nylon panties (worn by CWACs—not paratroopers) were singled out as a particularly potent source of shock.

While the number of amps in a pair of pants is small, there's strength in numbers and perhaps Hydro could help itself over the peak by sponsoring gigantic get-togethers near Christmas. In a day of sit-ins and love-ins, what could be more appropriate than a plug-in?

■ The robot maid and instant TV might also be mentioned in passing.

"With pulses only one hundred millionth of a second, physics would allow sending by laser a television program one year long in one second," observes Dr. Charles H. Townes, a co-developer of the laser beam.

Fancy sitting down on New Year's day and clearing up twelve horrible months of TV in less time than it takes to down a hair of the dog.

Less enthralling is the prospect held out by an English professor, who says an electro-mechanical maid can and will be developed for about \$3 million capable of performing most household chores.

Maybe so, but there's still a lot to be said for the more prosaic approach adopted by Mr. Ramoboa of the African Kingdom of Lesotho. Upon striking it rich in the diamond fields he promptly headed for town and purchased a new suit, three frying pans and two new wives. With two new wives, who needs a plug-in maid?

Looking around at the international scene as 1968 gets underway, the old song, "There'll Always Be An England" still seems valid despite General de Gaulle and the mini-pound. What's more, it could become the world's only all-electric monarchy.

Holding forth in the columns of Punch, Bernard Hollowood makes no bones about his preferences for the electrical way of doing things. "Nothing would induce me to turn my back on electricity as a source of domestic energy in favor of liquid or gaseous alternatives," he says ... "we ought surely to be planning an all-electric Britain."

Most sinister of all new developments appears to be unfolding right on our doorstep and it threatens to render even the finest crystal ball services, such as our own, obsolete. As we understand it, econometricians (men who measure the economy) at the University of Toronto have been working for almost two years on some kind of computerized forecasting contraption designed to interpret economic trends. By September, they hope their electronic future-snooper will be perfected to the stage where it can map out 1969 in detail.

Good luck, boys — but we have a notion the world will be waiting just as breathlessly for our home-spun variety of punditry come next January as it was this.





beating the blizzard
 clean-air crisis
 undercover cities

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ontario hydro news

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the cover

"Do not enter," says the sign yet drivers passing this tree-choked street would have little choice. The scene was representative of thousands of similar situations throughout Southern Ontario after last month's ice storm. A report of how the emergency was handled by Hydro crews appears on page 10.

editorial board

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Issuing forth from the paint bath, this embryo Falcon symbolizes the birth of a new automobile plant in Canada. The new arrival — genus Ford of Canada — is located at St. Thomas and lays claim to the title of the world's most modern auto assembly plant.

Bristling with innovations such as trackless trains and a selectivity tower, the plant uses as much electrical power as towns like Collingwood or Port Hope. Paralleling the newness of the complex are the workers. Only one in 10 had ever seen the inside of an automobile plant before, but they've all been schooled in an error-eliminating program dubbed zero defects.

For a closer look at the fantastic falconry, turn to page 6.



the air arous

ollution is the breathing man's business

om Muskett

old-fashioned idea that a smoking ney means prosperity and full lunch has given way to demands from ous people in many countries to the facts, the effects and the future of collution which hangs in the air.

igh most of them assume somebody.

somewhere is helping the situation somehow, they want to know who, and what and where and how.

After all, breathing has long been a favorite public pastime.

The credit for this awakening goes to disconcerting newspaper editorials, television discussions and predictions made by boundless numbers of experts.

And while some of their way-out prophecies of doom must be taken with a grain of salt, their combined efforts have focused attention on the urgent need for a long-term, international approach to a very serious problem.

More people crowding into relatively small spaces make the art of co-existence proportionately more important. With an



Weekly analysis of thermal station coal reveals the sulphur content and the amount of sulphur dioxide it will emit from combustion. In Toronto, vehicle exhausts, industry and homes contribute equally to polluting the air

annual growth rate of about 60,000, Metro Toronto's population by 1980 is expected to reach 2.4 million. In fact, by the 1990s the proportion of Canadians living in cities and towns will stand at a predicted 90 per cent. Urban dwellers today account for 70 per cent of the population.

But air pollution isn't new. As Hydro Chairman George Gathercole recently pointed out, "despite the marked attention and interest of recent years, air pollution is not a new phenomenon that has suddenly exploded upon us. As a byproduct of our rapidly growing industrial and urban environment it has been, in a sense, snowballing over many years and, having been a long time in the making, will certainly defy quick and easy solutions."

There has never been a truly unpolluted atmosphere. Ragweed and other pollen-producing plants as well as decaying animal and vegetable matter and the products of forest fires and volcanoes have emitted gaseous and particulate matter for eons.

Accounts of medieval towns in Europe indicate that the air was fouled by wood smoke, ash, decaying rubbish in the streets and noxious trades such as tanning. Some say atmospheric pollution as a social problem dates from the beginning of the 14th century, but for the poet Horace, who was saddened by the smokedarkened temples of Rome, the problem began in the first century BC.

Crude petroleum was burned in ancient Persia, while natural gas flamed in some Persian shrines of Ahuramazda.

With the smoky arrival of the industrial revolution which blackened the Midlands of England in soot and grime, society struck a love-hate relationship with mass-produced comforts. Besides stamping out essential goods as had never been done before, industry began the unending struggle to meet the feverish demands for fads and fashions by manufacturing tinsel, trinkets and trash to satisfy every taste. Then, as today, people hated the odious by-products of smoke and gases, but enjoyed the new way of life.

Sources of air pollution grew with technology. Suspended in the air today more than 50 separate pollutants have been identified over large cities. About one-third of Metro Toronto's contaminants come from industry, another third from residences and the rest from vehicle exhausts.

From industrial plants, apartment buildings and private homes come vapors, dusts and cinders. Pollutants drift into the tainted heavens from refineries, dry clean-



ing plants, factories, public dumps, pair shops, backyard barbecues, kitchen ventilators, burning leaves, incinerators, lawnmowers, home furnaces, auto tires household dust mops and even speedir rockets.

And, of course, nasty acrid mixtures gurfrom truck, bus and automobile engines. At present, over 700,000 autos roam Mc Toronto streets, burning an estimated 90,000 gallons of gasoline downtown eday. Each gallon, when burned, discharg 75,000 billion microscopic particles into the atmosphere.

The 10,000 planes which fly into New York City weekly leave behind them 18 million tons of water vapor and 36 million tons of carbon dioxide.

The Federation of Ontario Naturalists estimated last year that pollution of air, water and soil costs each person living Ontario \$72 a year — about \$500 millio

Doctors firmly believe air pollution play: If important role in bronchitis, pulmonary diseases and other ailments including emphysema, one of the fastest growing illnesses in North America.

Fortunately, many paths exist for corpo and individual action in the campaign curb pollution of our blue skies.

Hydro acknowledges its responsibilitie as a contributor to the sorry state of ou atmosphere. Its concern with the envir





nt was first demonstrated many years when a comprehensive air quality ntrol program was launched.

its first coal-fired generating station, tario Hydro has spent or committed ore than \$30 million on the control of air illution. In the process, it has found that it-pollution measures can be plain od business. In addition to earning the odwill and respect of informed neighbors, close control, inspection and pervision have resulted in more efficient oduction of power from each pound fuel.

showing Hydro's concern about the air breathe, Mr. Gathercole recently told a Toronto Metropolitan Works Comtee: "The commission values its utation as a good citizen, and is fully pared to accept its share of responsity for maintaining a satisfactory standard air quality in the community."

told the committee that Hydro presently erates four coal-fired plants and that other large stations were under conliction near Sarnia and Port Dover.

Hydro, the operation of coal-fired ions creates two main pollutants: fly and sulphur dioxide emissions. Fly ash, lcum-like substance, no longer looms e simply because Hydro has virtually stoome it

the use of mechanical and electroic precipitators Hydro has been able duce the escape of fly ash to one pound in every 200 pounds produced—the amount given off in burning one ton of coal.

The story of these ingenious devices is one of continual improvement. At Toronto's R. L. Hearn plant, the original precipitators were designed to remove up to 97.5 per cent of the fly ash. Later, Hydro committed \$4 million to upgrade precipitators to a 99.5 per cent rating on three of the largest units. On completion of the air quality control program at Hearn, \$10 million will have been spent.

Improved equipment at Lakeview G.S., just west of Toronto, and the installation of 99.5 per cent effective dust collectors, will have cost \$11 million when the plant reaches full capacity. It's the same story at Lambton and Nanticoke where modern, custom-made pollution control machinery will be installed before production commences.

The main problem facing Hydro today is the reduction and, hopefully, the removal of sulphur dioxide from flue gases.

Ironically, despite the shortage of sulphur and increasing world prices, no practicable means of extracting the substance has been developed. Certainly more than 20 processes exist, but none has yet proved satisfactory for large-scale operation.

Several processes under study in Canada and throughout the world involve differing

methods of trapping sulphur gases through chemical reaction to produce sulphuric acid or sulphur for later sale. Among other problems, efforts to wash flue gases have interfered with dispersal from chimneys. Hydro keeps in close touch with these developments with hope that a practical system will eventually evolve.

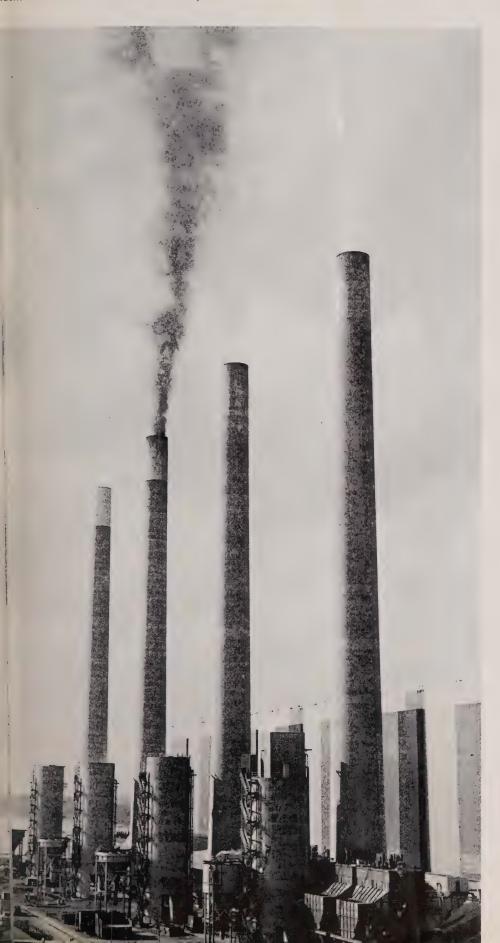
Much has been achieved in minimizing the sulphur dioxide problem. To attain maximum dispersion and low ground-level concentrations, design engineers give close attention to surrounding terrain, prevailing winds and contour of power station buildings in choosing the best height for each chimney.

Using a special wind tunnel test at the University of Toronto, Hydro decided Lakeview's smokestacks should stand 490 feet high to deliver gases in an upward punch through warm air blankets which might settle over the area. At Nanticoke G.S., engineers have decided to build one large multi-flued smokestack combining all four chimneys from the plant's four, 500,000-kilowatt units. This will increase the momentum of escaping gases and thus give better diffusion.

Local pollution forecasts prepared by Hydro's own staff of meteorologists tell operators about such weather conditions as temperature inversions and changing wind direction. Should the prevailing winds at R. L. Hearn change, operators would switch to coal with a very low sulphur content. This coal is obtainable only in



ecipitators precipitate, newly designed ulti-flued chimneys rise, minds meet, coal piles e sprayed and sulphur dioxide measuring candles e checked in Hydro's war against pollution. nermal station precipitator effectiveness is ident when one is shut down momentarily.



limited quantities.

News of international developments in pollution control is sifted by the commission's eight-man technical pollution committee, which studies air quality control activities and makes recommendations.

Research Division personnel keep watch over changing air quality levels with surveying and recording equipment.

Presently, about 120 lead peroxide candles scattered strategically around Ontario indicate monthly sulphur dioxide content of the air. Four automatic SO₂ recorders, costing about \$7,000 each, provide instantaneous readings of sulphur dioxide levels. At thermal plants, smoke density recorders, weekly chemical analysis of coal and rigid specifications set for fuels provide additional control.

While making every effort to reduce air pollution through the use of improved design and technology, the commission looks forward to the time more and more Ontario homes and industry will be supplied with power from fumeless nuclear-fuelled generating stations.

However, coal plays an important role in the production of power and will continue to do so for the foreseeable future. There are many reasons, including operating considerations, why it is not desirable to embark upon an all-out nuclear program. Coal-burning plants are less expensive to build and can be stopped and re-started more economically. Nuclear plants, with their high capital cost and comparatively low fuelling expenses, serve the system best when they operate around the clock. And as far as fossil fuels are concerned, coal is the most readily available and the most economical.

Only last month, Hydro took another step in the war to cut down air pollution in Metro Toronto by retaining a firm of engineering consultants to study the operation of the Hearn plant. The consultants will study the degree of contamination produced by the plant and make suggestions for corrective measures. Looking to our skies as we may expect them to appear in the years ahead, there is both sunshine and overcast. Certainly, air pollution control is an over-riding and all-pervasive problem which will only yield to a concerted effort on everyone's part. After all, everyone contributes.

electricity powers progress



the fantastic falconry

by Hal O'Neil

"Do it right the first time. Right from the start."

This simple, direct motto was adopted to eliminate errors at the new Ford of Canada assembly plant near St. Thomas opened for the production of Falcons.

Nine out of 10 workers hired had never seen the inside of an automobile plant. But judging from the gleaming autos that are rolling off the line at an increasing rate, the zero defects program is showing results.

Backing up the 1,000-man work force is the world's most modern assembly plant, bristling with innovations and so large it could accommodate 26 simultaneous football games under its roof.

A unique feature of the \$65 million plant is the order in which the seven different models are put together. Until now, auto plants have built the complete car with interior upholstery and trim before the drive train and electrical system could be tested and the body checked for water leaks. At St. Thomas, the assembly order has been reversed so that the necessary testing is done on the unmarried components.

Ultra-violet or black light is used in testing watertightness of the unfinished bodies. A chemical which glows bright

purple under the light is added to water used in a spray tunnel. Then at the end of the run, all a worker has to do is train black light inside the trunk and body to pick up any traces of purple. Before, it was a case of groping around with the hands for moisture, and sometimes missing it.

A new approach to painting is also in use at the plant. For the priming coat, the bodies are dipped in a 50,000-gallon tank of water-base paint. It isn't simply a matter of dipping, however. Every nook and cranny gets its share of paint since the system is electrostatic. The vehicle is given a positive charge and the paint a negative charge, drawing one to the other during the two-minute dip. Electrostatic priming also avoids the problem of paint sag and gobs of paint forming at the corners and edges — characteristic of a simple dip.

Thirteen ovens dry the three coats of paint each car gets. Although drying time is the same — 20 minutes for each coat — the temperatures vary over 200 degrees. The prime coat is hardened at 400 degrees while the first and final enamel coats are dried at 195 and 300 degrees.

Worker comfort and safety were not forgotten. All major oven and painting operations are located in a remote area reached through a long corridor. Excessive heat and vapor, necessary evils in painting and drying operations, are thus restricted to a minimal area and more easily dissipated. On the paint shop roof are smoke penthouses designed to blow out under extreme temperatures allowing smoke and heat to escape. Under normal operations, massive roof fans suck heat and vapor outside.

One of the way-out features of the Falconry is trackless tow trains which move throughout the plant, delivering materials from receiving dock to assembly line. The trains, consisting of an engine and eight to 10 trucks, run without either tracks or operator to guide them.

The only evidence of a guidance system is what looks like a saw cut in the concrete floor into which a cable has been forced. The robot trains are pre-programmed to follow certain routes, stopping at designated areas for a specified time for unloading and then moving on without a switch being touched.

A revolving light warns of the train's approach. If there is anything in the way, sensors detect it and sound a horn. As a further precaution, the trains automatically stop before they actually ram into an obstruction.

The assembly line, which zigzags into almost every reach of the plant, is some six

Putting almost completed units through the paint system assures identical color and shade of each component at the St.
Thomas plant. Although facilities are highly automated, workers' guiding hands assure high quality.





robot trains, magnetic paint and black light speed production in Canada's newest auto plant



miles long. Powered by electricity, various sections will disengage to allow adjustment of components and maintain an orderly flow of the main line. In all, there are 164 different conveyors throughout the plant.

Already one feature of the plant has become a landmark. Called a selectivity tower, the 120-foot high structure contrasts sharply with the low 28-foot silhouette of the rest of the complex.

The tower was designed to give flexibility to the assembly line. In effect, it acts like an automated 10-level parking garage, allowing engineers to quickly alter the production mix by slipping in one or two partially-completed cars from the tower. Forty cars can be stored there at any one time.

All equipment and cars in the system are constantly monitored from a central electronic control room. From here, engineers can spot delays or equipment failures instantly. For each of the 950 cars in the system at any time, a corresponding punched card controls its make-up. It takes just over 22 hours for a vehicle to pass through the line.

Normally, automobile plants need only 650 units in the system to function. At St. Thomas, the additional 300 cars provide more time for inspection and correction of faults.

The final inspection area includes such

facilities as booths where the neophite cars are washed and waxed, machines where the toe-in, camber and caster angles, along with the head-light focus are set. One other final inspection feature is a reflow paint system. Here, paint defects are repaired by reheating the car body to 260 degrees, making the paint plastic and able to flow again. It also prepares the body for a complete repaint if necessary.

Electricity is vital to virtually every phase of the production process. Power requirements are in the neighborhood of 12,000 kilowatts — about the same as the entire needs of the towns of Collingwood or Port Hope.

Electricity is supplied to the plant directly from Ontario Hydro at 115,000 volts. The plant's main substation is east of the building and from there the power is funnelled to in-plant transformers at 750 volts. Working off this are 5,000 lighting fixtures. In areas of close work, high-intensity fixtures are used to form an almost solid roof of light.

Other services include a special line supplying water to a storage tank holding more than 1,000,000 gallons. Other tanks contain thousands of gallons of gasoline, transmission oil, anti-freeze, brake fluid, paint and naphtha.

With about 300,000 people in a 35-mile radius of the plant, recruiting staff wasn't difficult. According to Ford, the main part of the labor force came from the area, although some did come from as far away as Montreal. Others, Canadians by birth, returned from work in the United States. It's estimated that for every job there were seven applicants.

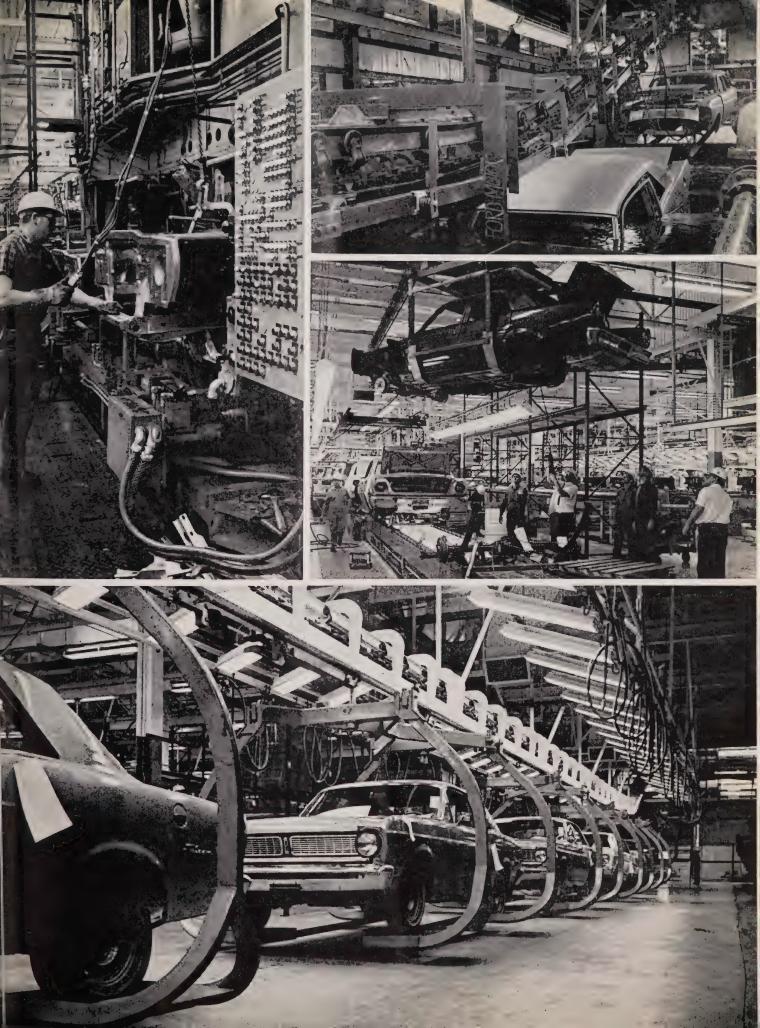
Canada Manpower set up a branch in a farmhouse next door to the plant to process applicants. Those applying for assembly-line jobs were given an aptitude test. The results were processed in the St. Thomas Manpower Centre. Applications of people showing promise were turned over to Ford for interviewing.

Ford conducted 180 separate courses to familiarize new workers with auto production. Included in the curriculum was a course in the zero defects approach.

Going hand-in-hand with the young look of the plant are the men on the assembly line. There's a preponderance of workers in their early 20s, newly married and eager to earn the above-average wages prevalent in the auto industry.

A possible 65,000 cars will roll off the St. Thomas line in its first year. The zero defects program should ensure they're done right the first time. Right from the start.

From one end of the assembly line at the Falcon plant to the other, it's a go-go world. Stamping out front ends, automatically dropping a unit into the electrostatic primer tank or swinging an extra embryo into the line — all are aided by electricity.





storm sentre

by Bob Morrow

doggedness and co-operation pull Southern Ontario through five of the worst days in utility history

Trees toppled, lines fell sputtering to the ground and winter clamped a cold grip on thousands of homes as one of the worst ice and snow storms in living memory swept across Southern Ontario last month.

Worst-hit were the cities of London and Toronto. So badly affected were these centres that it took a haggard, weary army of linemen five days to restore power to stricken homes and industry. The Hamilton-Brantford area was dealt a lighter blow and mopped up more quickly.

Prelude to the disaster was an all-day ice storm that started early on Sunday, January 14. Laden branches soon began splintering away from ice-coated trees, taking power lines with them. Candles, lanterns and flashlights flickered on as the mercury plummeted.

About 6 p.m. came the second punch — up to 11 inches of wind-blown snow. Switchboards at Ontario Hydro and the local utilities were jammed with calls from anxious customers. Toronto Hydro alone had 5,000 trouble calls in 36 hours. By Monday, the whole of Southern Ontario was a bleak wasteland smothered in deep drifts and obscured by blowing snow.

As fast as bone-weary linemen got power back to one area, emergency calls came from another. At the peak of the crisis,

Toronto Hydro was struggling with 10,000

stricken customers, but London suffered a far greater blow. At one period, an estimated 30,000 customers of the PUC were without light and heat. Widespread interruptions in the outlying areas added greatly to the total.

Hydro's vast organizational machine went into action across the province. . . . Reinforcements were called in from the Ontario Hydro regions and the municipal utilities. One Ontario Hydro line crew drove 500 miles from Timmins to Stoney Creek, near Hamilton, where more than a mile of 27,000-volt line had been torn down.

The system of co-ordination and cooperation that swung into operation was set up two years ago with just such an emergency in mind. It was the brainchild of the Ontario Municipal Electric Association and the Association of Municipal Electrical Utilities. In essence, the operations engineer in the affected region marshals men and equipment as they are needed.

"London has never had a storm that required help from outside the city," said Ward Stiles, the Ontario Hydro operations engineer for Western Region. Yet during the week 110 men and some 50 pieces of equipment poured into the city from more than a dozen utilities — including Windsor, Chatham, Woodstock, Goderich and Seaforth — and from Ontario Hydro areas as far away as Peterborough.

About 125 men were dispatched into Toronto from eight neighboring utilities and Ontario Hydro. The total work force

built up to 700 at the height of the clean-up.

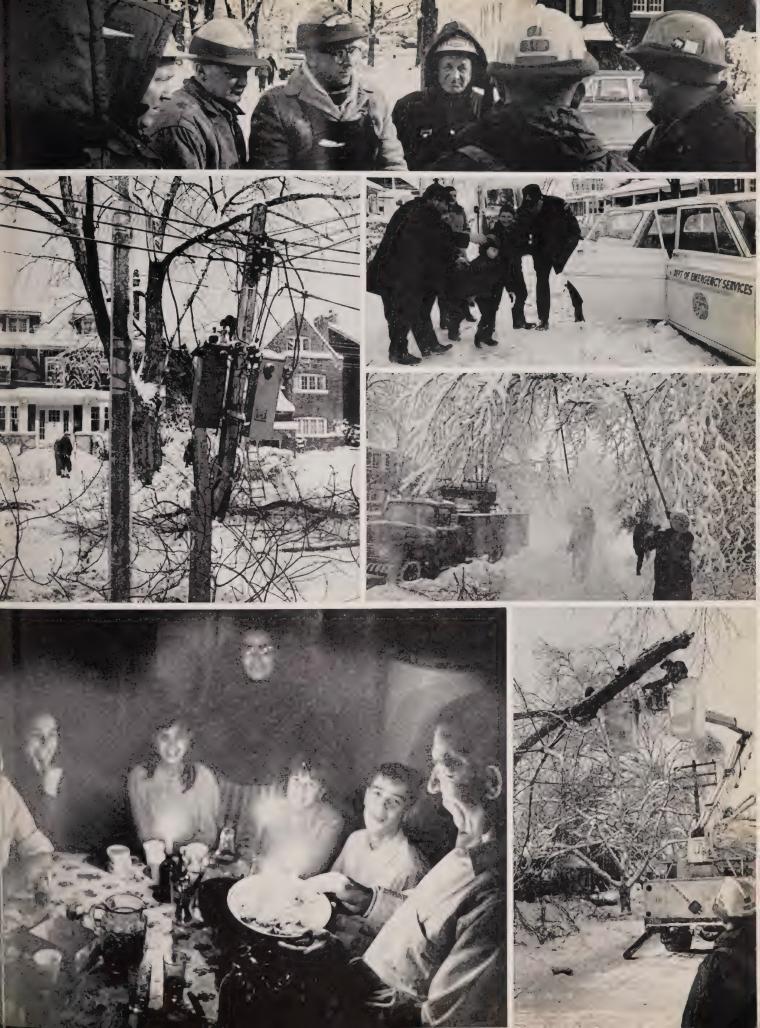
"This storm was at least four times wor than our last bad ice storm a few years ago," reported Ralph Bishop, Toronto Hydro's director of service maintenance who worked in the control room 29 hours from Sunday noon.

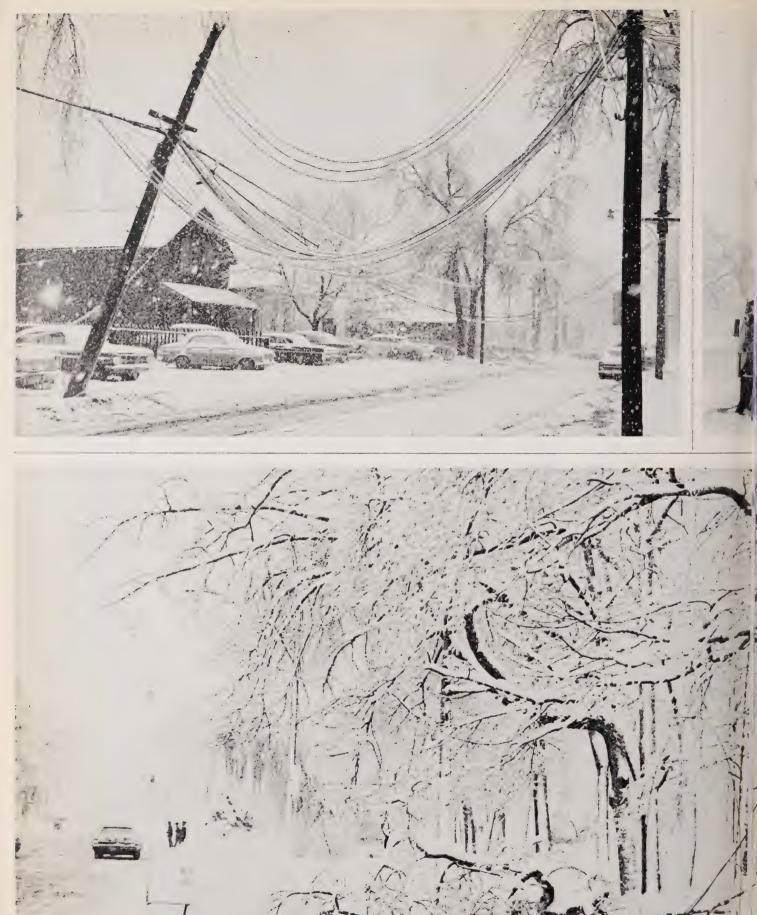
Eighty-six men together with tracked vehicles and skidoos were rushed from Northeastern Ontario to Stoney Creek where linemen were wading through hi deep snowdrifts. Some were diverted to aid the Brantford and Brantford Township utilities.

Throughout, it was a story of cooperation. Personnel from the Emerger Measures Organization arranged temporary accommodation for families mo seriously hit while people with power welcomed in their less fortunate neight Municipal police forces relayed inform tion and guarded downed wires. Radio television stations issued instructions and public service bulletins.

By Friday night, power had been resto to all Toronto Hydro customers. Londo

Line crews discuss plan of action before sort, out the snarl of downed wires, broken poles ice-caked hardware. Many families ate by candlelight while the Emergency Measures Organization arranged temporary shelter for those unable to cope.









had about 40 without service until Saturday.

But a massive clean-up remained in those two cities, where many temporary repairs were made to restore light and heat. Eight days after the storm, 14 outside crews were still working in Toronto. Another eight crews, together with other workmen, helped London PUC clear fallen trees and branches.

Toronto Hydro officials said it would take weeks to restore complete security of service to some areas. During the week, 84 primary feeder lines were knocked out — 30 at one time — and more than 1,000 smaller lines downed. London had similar problems.

In the aftermath, London, Hamilton and Toronto newspaper editorials praised storm-weary Hydro workers. A Toronto radio station presented its "Good Citizen Award" to Toronto Hydro crews who, with their allies, fought their toughest battle — and won.

The line crews themselves were full of praise. "One thing that did stand out was the people," said Norm Olan, a Toronto Hydro lineman who worked nearly 24 hours at a stretch.

"Nobody griped at us or criticized. One night, a woman brought coffee out that her husband had somehow made over a candle. Their power was off."

going underground

The havoc inflicted upon electrical systems by the ice storm has revived the cry for underground distribution and, in the process, strengthened the suspicion that the public is still largely unaware of the facts of the situation as they exist today.

No one quarrels with the desirability of underground systems from the appearance point of view and for the added stability they provide under certain weather conditions. Essentially, it's a question of economics.

Costly as they are, these storms occur

Winter has its own particular beauty in the wake of a major snowstorm. Few have time to appreciate it, though. infrequently and over relatively small areas so that the savings inherent in the extra protection of underground construction could never offset the great additional cost. Even so, the utilities place a high aesthetic value on underground and they are proceeding with the job in the only manner likely to be acceptable to their customers.

Many Ontario municipalities have passed by-laws, or the utilities themselves have established policies, ensuring that all services in new subdivisions go underground. Costs vary from municipality to municipality with soil conditions, load density and other factors, but the extra cost of underground in new areas is generally not prohibitive. Converting to underground in established sections already supplied very satisfactorily with overhead lines is another story.

Ontario Hydro estimates it would cost between \$1.3 billion and \$2.2 billion to bury all the municipally-owned lines in the province — to say nothing of the half million rural customers served directly by the provincial commission. This is many times the cost of the entire frequency standardization program, carried out between 1949 and 1959, and which is still being paid for. It would mean doubling or tripling electrical rates — a procedure which could not seriously be entertained.

Yet much is being accomplished. Most major utilities in the province are carrying out positive and continuing programs of underground construction based on their ability to pay. In established areas, many are taking advantage of urban redevelopment such as street and sidewalk renewal to replace overhead with underground services at substantial savings. This procedure, coupled with the growing trend toward underground in all new subdivisions, has already effected a subtle change in the appearance of many streets and neighborhoods.

The acknowledged leader among the provinces in underground progress, Ontario is also further advanced than most of the United States in this field, both in quantity and from the standpoint of technological excellence.

At least part of the credit must go to the Association of Municipal Electrical Utilities, which has co-ordinated the vital work of establishing standards of design, technique, and equipment. Through these measures, it hopes at least to stabilize costs of underground construction in the face of inflationary pressures affecting every phase of utility operations.

Like the utilities it represents, the association intends to keep on top of the underground movement.

bubble cities on the boil

by Les Dobson

the dome may be home to millions, experts say

Toronto engineer Terence McLorg has a dream of a city. It has a year-round climate similar to that of southern California or the French Riviera, homes and buildings without roofs, moving sidewalks and a complete absence of motor vehicles. There's no rain, no snow and no air pollution . . . unless you care for a stroll outside city limits.

Of course, it's all strictly in his imagination. But he does believe that such a utopian community is just around the corner.

The trick is to enclose the city in a series of air-supported plastic domes, hundreds of them. It's an idea that could persuade the jet-set to settle around James Bay; bring eternal spring to a farm in northern Saskatchewan.

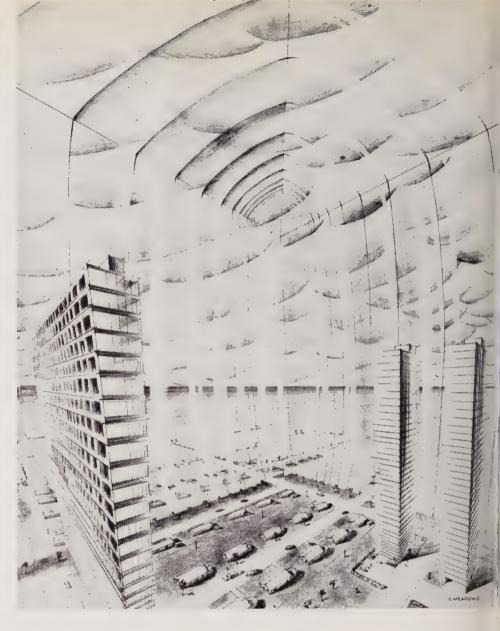
The concept of a domed city is not as way-out as it might at first appear.

Mr. McLorg is a prominent engineer and executive vice-president of the Canadian Refrigeration and Air Conditioning Association. And he's in excellent company. Buckminster Fuller, inventor of the geodesic dome and designer of the US pavilion at Expo, has suggested enclosing a large area of central Manhattan. He claims that savings in snow removal alone will pay for the dome within 10 years.

Mr. Fuller is now sitting on a prestigious committee that may well pave the way for a \$4 billion domed city on the windy barrens of Minnesota. The committee is headed by Dr. Athelstan Spilhaus, president of Philadelphia's Franklin Institute, and includes such notables as Lt.-General Bernard Schriever, recently retired head of the US Air Force Systems Command.

The research phase is being conducted by the University of Minnesota under a \$250,000 federal grant, plus sizeable sums donated by local industry. General Electric is acting as sub-contractor on the project.

Mr. McLorg believes that Metropolitan Toronto could be enclosed by 2,300



connected plastic domes, each a quarter of a mile in diameter. Toward the centre of the city, the base of each dome would float at an altitude of 1,000 feet. They'd get progressively lower toward the city boundary.

Remarkably, a plastic membrane would dispense with the need for all visible means of support. A difference of only one per cent between the internal and external atmospheres would be enough to keep it inflated high above the city.

"In winter, with all that warm air inside, our main problem will be to hold it down," says Mr. McLorg. "In summer, we will have to pump air into it to maintain a pressure slightly higher than normal."

Buckminster Fuller says that the sun could so heat the interior of a geodesic dome that it would become much lighter than the surrounding atmosphere and float away from the earth's surface. Taking a peek into the distant future, he envisag vast geodesic cities floating like clouds around the earth or anchored to a convenient mountain top. For a start, thous structures will be well and truly ancho

Mr. McLorg sees city-wide climate cont as a logical extension of the total environment concept of heating, air-conditioning humidification and air cleaning installe in many homes and most office building today. He claims it would bring an altogether new dimension to city life, opening the door to such forms of transportation as moving sidewalks and battery-propelled personal runabouts.

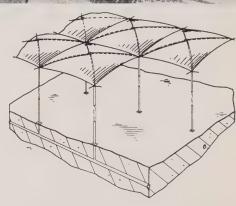
All precipitation falling across the city would be collected to supply most of th community's water needs. Were the interaction to melt snow falling on the dome, electric heaters could be installed high above the city.







THE MAN AND THE IDEA: enclosed city would look much like this, according to engineer Terence McLorg. Transparent plastic domes are held aloft by internal air pressure. Each section is tethered to the ground by hollow cables that also drain off rain or melting snow.



lluted air would rise through apertures the plastic membrane, much like oke from a chimney.

for materials, there is already a apparent plastic in existence that may II be suitable for construction of a ather-proof dome. When reinforced the fibreglass, the plastic — polyvinyloride — offers hope for a life of between and 25 years.

sing things a step further, it may be sible to construct a membrane that I admit shortwave heat from the sund retain the longer wavelengths mally radiated back into space from earth's surface. This would allow a hificant and controllable build-up of temperature within the dome.

feriments in the use of air-supported f structures were conducted in England ar back as 1917. One of the first cessful applications came in the early as when a team from Cornell University

developed a pneumatic radar dome for the air defence line across the top of North America. Gradually these domes were improved until they now come in sizes up to 200 feet in diameter. Their uses extend to exhibitions and recreational pursuits as well as the purely military application.

Ontario Hydro is currently experimenting with a clear-span structure to provide winter protection during concrete pouring at the site of Pickering nuclear power station, east of Toronto. Enclosing an area of 10,000 square feet, the building forms a huge arch rather than a dome. It is covered with nylon-reinforced polyethylene over an aluminum frame.

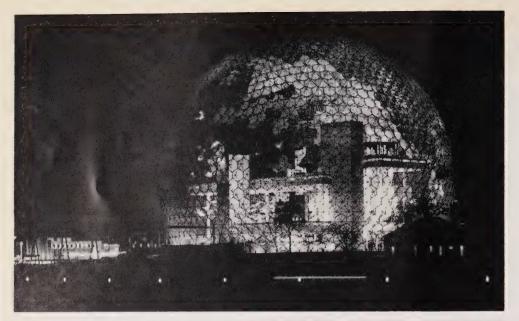
A large furnace keeps the inside temperature around 50 degrees. Hydro uses other temporary shelters during winter construction, but hopes to save time and money with the new structure. It should

be possible to dismantle it into four sections and move it by crane to another part of the site within a day.

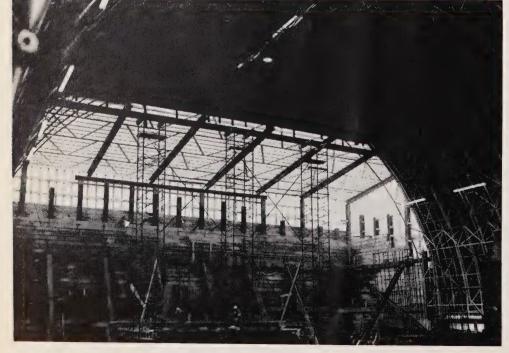
The Russians are reportedly interested in enclosing a city while only last year Canada's National Research Council did design work on a hypothetical dome 1,000 feet in diameter for Resolute Bay, north of the Arctic Circle.

Perhaps the outstanding example of domed structures in the western world is the Astrodome at Houston, Texas. This \$38 million venture is of rigid construction and took just two years to build, being completed in 1965. It measures about 700 feet across and can seat up to 66,000 spectators.

Apart from its primary purpose as a sports stadium, the Astrodome has played host to gatherings ranging from evangelical revivals and rodeos to bullfights and boat shows. The building's temperature is maintained at a comfortable 72 degrees;







the air filtered by the equivalent of 10 becars of activated charcoal. Air-condition fans circulate 2,500,000 cubic feet of air a minute. Smoke and hot air are drawn out through a 40-foot opening in the crown of the dome.

Engineers believe it is quite feasible not to build an air-supported dome for a sports stadium. Such an enclosure wou be a boon to Grey Cup fans and player alike.

A sports stadium is one thing; covering an entire city is a vastly different proposition. Air pollution makes the task of enclosing an existing city perhaps too great for contemporary technology. Yet many experts feel that a pollution-free domed community could be built from the ground up right now.

Dr. Spilhaus argues that, in any case, many large cities have outlived their usefulness. Because of modern transpotion and marketing methods, commerce no longer needs the city as it once did. Some industries have seen this and are moving out, although our cities continuto sprawl.

Dr. Spilhaus believes that dispersal is the answer, not urban renewal. He propose the building of numerous cities of betw 250,000 and 500,000 population, each surrounded by 40,000 acres of open country. With an annual U.S. population growth of three million, a dozen new cities would have to be built yearly. Some of these, he says, should be covered in part by giant domes.

Mr. McLorg also feels that the future linot with enclosing an existing city but with the new, all-electric and pollution-free community, probably powered by nuclear plants outside the dome. "To nimind, the main technical problems involved in enclosing an existing city ar not those related to structural stability (thermal stability. Rather they are those involved in keeping the inside of the dome clean," he says.

He believes that climate is the most important single factor in man's development and by way of example cites California, which between 1950 and 1960 grew nearly two-and-a-half time as fast as the remainder of the United States.

"We need to reproduce California's climate in northern Saskatchewan," he says. "And with a dome I believe we can do just this."

Clear-span structures are becoming more and more common. Shown are the US pavilion at Expo '67, the Astrodome at Houston, Te) and a prefabricated building used by Ontario Hydro at its Pickering nuclear project.



calling all kids...

Call it a museum and you're dead. It's a centre — officially The Centennial Centre of Science and Technology — and it's a unique project in public education initiated by the Ontario government.

"Rightly or wrongly, the word museum has acquired overtones of the dead past," explains William O'Dea, director-general of the centre. "When not actually leapfrogging into the future, we will be very much of the present."

The breakdown of exhibits is likely to be about 20 per cent past, 70 per cent present and 10 per cent projection. It's an ambitious concept that's now taking tangible shape near the southwest corner of Don Mills Road and Eglinton Avenue, in

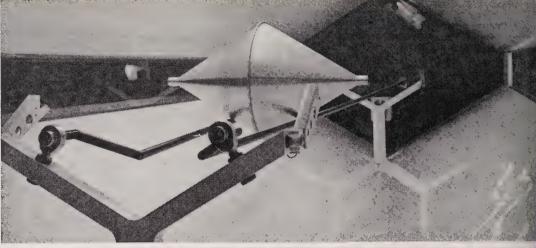


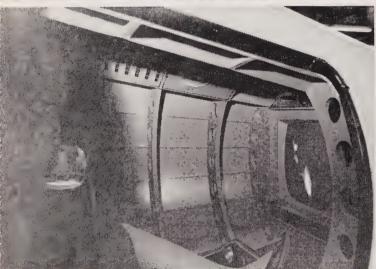
Science centre is taking tangible shape in the form of three interconnected buildings on a 20-acre Toronto site. Many displays are ready to be moved in as the buildings are completed. Participation will be the keynote of exhibits.

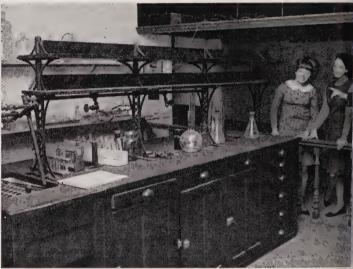
rom the start, the Ontario government science centre has been steeped controversy. Latest word is that it will open to the public early in 1969. Meanwhile, exhibits te taking shape for what promises to be a fascinating display.

... please touch the exhibits









North York, and at the centre's temporary workshops nearby.

On a 20-acre site swooping dramatically into a ravine, three interconnected buildings worth about \$21 million are nearing completion. Scores of displays and exhibits are already finished or under construction. It's Ontario's official Centennial project and, although it will probably be another year before it opens, the centre promises to be well worth waiting for.

Visitors to the centre — in which it is expected there will be a key exhibit on electricity — will be principal actors rather than passive observers. Mr. O'Dea and his staff use the word "participation" a lot. It means visitors will set a number of exhibits in motion; in others, they'il take an active part in controlled experiments. "Please Touch" signs will be everywhere.

Basic policy will be to show things as they are today and how they may be tomorrow, not just how they evolved in the past. This is a growing trend. A former official of the Smithsonian Institution says, for example, that within a few years the Smithsonian in Washington will be the only historical science museum left in the United States.

But there'll be hundreds of science centres and Ontario is pioneering in this exciting new field. At present, the Ontario centre is unique, although three others underway abroad bear some similarities. It will depend substantially on industry support for exhibits that will keep the public — especially the young — generally aware of what is happening in science and technology, and what is likely to happen.

So far, more than 50 major companies have agreed to participate. And many others are expected to follow suit, according to the centre's board chairman, industrialist John G. Crean.

First and foremost, the centre is a major educational tool. Among its 100 staff members is Douglas A. Penny, a curriculum development specialist on loan from the

Ontario Department of Education. He inhelping the centre prepare for visits by 50 to 60 busloads of students daily. Bustructing students is only part of the

"The fact is," says the genial Mr. O'De." that computers, automation and the scope and speed of change can be frightening to people." He believes that basic understanding of science will distantiate this fear and is important because our standards of living depend so heavily science and technology.

The centre, therefore, also has a role adult education. It will even be inform to scientists and engineers outside the own specialized field. The magnetism this kind of institution is demonstrated the fact that the Chicago Museum of Science and Industry attracts more that three million visitors every year.

The usefulness of such a centre to industrial recruiting, particularly research and development, cannot be overlook. The need grows yearly in Canada for scientists and engineers and Mr. O'De

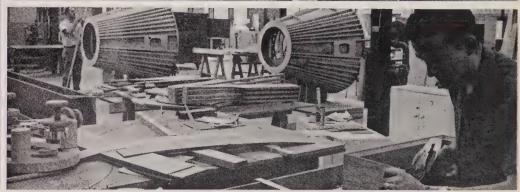




Optical illusions, space capsules, TV sets energized by pedals, a replica of the Toronto laboratory in which Banting and Best discovered insulin . . . all will enthral visitors young and old. Also shown are design teams and carpenters at work and the centre's directorgeneral, William O'Dea.

photos by Harry Wilson





ieves the centre will stimulate a high centage of its young visitors to follow entific or technological careers.

ildren of public school age will be ticularly attracted to the youth section, vering 24,000 square feet. Most of the hibits in this area have been designed by here staff — some by Mr. O'Dea himself—h''participation'' uppermost in mind.

hild mounts a bicycle and starts dalling. Soon, a TV screen in front of the e lights up — with the child's picture, ismitted on closed-circuit TV energized the pedalling. The lesson is that it takes tof muscle power and human energy produce the TV picture we normally ain at the flick of a switch.

other child peers into a mirror, trying to e a star-shaped symbol by its reflection. From the guidelines, a buzzer and shaped soft any age can do this ectly the first time. Women of all presumably because they spend time looking in a mirror, do better.

Dentists usually sail through the test since they use mirrors constantly in their profession. The main point is to make youngsters aware that even a small change in the environment can result in a major loss of skills usually taken for granted.

Most of the display areas will be devoted to more sophisticated exhibits — but participation and enjoyment are still the keynotes.

"We will invite visitors to participate in controlled experiments," Mr. O'Dea says, "to compete with computers, to play scientific games, to activate complex machinery and detailed models . . . all of this will be backed up by the most modern audio-visual aids."

Sections of the centre will deal with basic science, controls, exploration, Canadian resources, transportation, communications, engineering and health.

The microscopy section in the Hall of Life will include a number of fascinating displays. One of the world's most powerful

electron microscopes will not only be viewed by visitors, but will be kept active in actual research work. Nearby will be the prototype of the first practical electron microscope in North America, developed at the University of Toronto in the late 1930s.

And there'll be a dozen or so mini-labs that will be equipped with several enlarging devices, ranging from magnifying glasses to 100-power microscopes. Here, sitting back to back on comfortable stools, youngsters will be able to examine a variety of objects.

In one of the transportation exhibits, visitors will use a computer to program a shipment of goods from, say, London, Ont., to London, England. They will feed in basic specifications — kind of goods, size of shipment, deadline for delivery, and so on. The computer will decide the best routes and modes of transport and then activate the necessary trucks, trains, ships or planes in sequence across a large, detailed model.

atoms and indians





Newly elected officers for OMEA district 4: Standing, John Christie, East York; W. E. Wright, Mississauga; M. J. Damp, Toronto Hydro, secretary-treasurer; John MacBeth, Etobicoke. Seated, Edmund Steer, Ajax, 2nd vice-president; D. P. Cliff, 1st vicechairman, Ontario Hydro; Donald Glass, Aurora, president; Elmer Archdekin, Brampton, 1st vice-president; A. K. Meen, North York, past president.

Ontario Hydro 1st Vice-Chairman D. P. Cliff presents a long-service plaque to J. T. Armstrong, chairman of Georgetown Hydro.

Breaking with precedent in a number areas, District 4 of the Ontario Munici Electric Association met in Etobicoke I month in a day-long session featuring v business deliberations in easy-to-swall doses. Previous meetings had always beheld in Toronto and usually were confirto the afternoon.

Tradition also took a beating fr OMEA President Dr. J. D. Fleming, we confined his remarks to public relationary review of year's activities. He said it was "extremimportant" that all phases of management understand and support the public retions program "Tell the People" now be undertaken by the association through district and central committees. Improving in the community was cited a number one priority on the munic Hydro agenda.

Dr. Fleming paid tribute to the assista rendered the OMEA by retiring District Chairman Arthur Meen, Q.C., chairman North York Hydro, who was elected to Ontario legislature last October. "Mr. M has been of inestimable assistance in past," Dr. Fleming said, "and we are loing forward to more of the same in future."

J. T. Armstrong, chairman of Geortown Hydro, formally acknowledged association's appreciation of Mr. Mework in a resolution and he drew attento R. D. Kennedy of Mississauga Hydrogenesis







District President Arthur Bennett looks on as ... W. F. Rannie of Beamsville receives a 15-yea award from George Gathercole, Ontario Hy chairman. C. R. Drynan of Hamilton and G. L. Bertling of Delhi also received awards.

Harmonizing after election are OMEA distriction officers John Krestel, Port Rowan, 2nd vice president; George Butcher, Simcoe; S. J. Chapple, Stoney Creek; W. S. Jennings, Niagara-on-the-Lake; John Wratten, Jr., Brantford, past president; Arthur Bennett, St. Catharines, president; Andrew Frame, Burling, 1st vice-president and Gordon Robertson, Lynden, at the keyboard.

ronto Township) who also won a seat he Ontario legislature in the last elec-. Mr. Armstrong was himself honored his 15 years of service as a commisner with the presentation of a plaque by P. Cliff, first vice-chairman of Ontario dro.

a brief address, Mr. Meen confined his arks largely to praise of the provincial lic speaking contest co-sponsored by the throughout the province. Mr. Meen, or represented the District 4 OMEA nsors at the zone finals last year, said had never fully appreciated the impact contest had on young people.

Last year there were about 100,000 icipants in our district alone", he said, d frankly I was absolutely astonished he ability of the young speakers. Onby Hydro provides magnificent support at the organization level and at the tests themselves."

epresenting the association's co-ording committee on public relations, drew Frame, of Burlington Hydro, told egates that the demand by the public more and more information from comce and industry applied equally to the dic utilities. He said utility "whisper sions" at which the real business was netimes discussed in camera could only

aken the utility image.

In briefing delegates on the provincial ver picture, Mr. Cliff refuted Hydro cs on a number of fronts, including the

purchase of power from inter-connected utilities.

Recent press reports spoke of Hydro being forced by the present situation to buy what was referred to as "expensive power" from American sources, he said. These were words almost certain to conjure up a picture of a grasping Uncle Sam holding a gun at the commission's head. The facts were that Ontario Hydro was constantly exchanging power with interconnected utilities in the United States, buying and selling huge quantities when it was most economical.

Citing 1966 as an example, he said Hydro had been a net exporter — earning about \$453,000 in the exchanges with the US. He said the situation in 1967 and 1968 was likely to be comparable.

Mr. Cliff also answered critics of the nuclear power program. He said assurances had been received from AECL, which designed and owns the Douglas Point plant, that nothing has been encountered reflecting adversely on the system in use at the station. He said it is serving, in part, as a prototype in which the operational bugs would be ironed out before the system is adapted to larger plants. There was no reason to expect similar problems at the Pickering development.

Referring to Hydro's early and extensive involvement in the uniquely Canadian natural uranium concept of power production, he had this to say:

"Had we waited, we might now be far behind other industrial nations, in which event we would be doubtless facing accusations at home of timidity and lack of enterprise. As it is, Hydro has been accused of being too bold . . . but power demands never could await perfect hardware."

The day-long business sessions were lightened by a number of diversions — not the least of which was the whooping entrance of Big Chief Megawatt in full Indian regalia. Under the feathers was Elmer Wright, chairman of Mississauga Hydro. He used the guise to emphasize how the former Toronto Township had been "given back to the Indians" on the first of January and was now the nation's largest town.

Other histrionics included a performance by a talented local group known as the Impeccable Players. Portraying utility Hydro commissioners smitten with the news of a rise in the wholesale cost of power, they managed to convey the suggestion that a positive reaction was greatly to be preferred. Emphasize the positive, was the gist of their message. Utilities must use the occasion to point out the bargain electricity continues to represent in this province.

The Electrical Utilities Safety Association also took to the boards in an effort to show how volts and vodka are poles apart. The skit featured a line foreman with a hangover to punch home the theme "get on the ball or get on the bus" where safety is concerned.

trict 5 OMEA

ilent service kes a rap

ff upper lips must ke more noise

egates of district 5 OMEA took a cold, d. practical look at public relations, or negotiations and regional governat studies at their annual meeting at dan.

ndrew Frame, Burlington, a member of OMEA-AMEU Public Relations Conating Committee, showed 80 deless how they looked in the public eye. Dack up his point about their confused Je, he displayed headlines from over newspaper articles — some complitary and others critical.

Bilent service is not enough," he said. r utilities must tell more about themss."

he first step in the PR program outlined Ar. Frame was a four-page pamphlet cent on Service", designed for mailing stomers. Stressing that the contents of the mailer should be tailor-made to each utility, he said it was aimed primarily at the housewife. Some of the suggested points to be covered in the bulletin were: hydro is a local business in which customers are shareholders; regular telephone numbers and after-hours numbers; services offered by the utility and information about employee training.

A mail-back questionnaire could also be included with the pamphlet, he said, if local commissions wished to know how customers felt about service and rates.

An annual report, simple in nature, is to be the next step in the program. Mr. Frame suggested that both items be prepared and printed locally.

Ontario Hydro Chairman George Gathercole spoke at the dinner after presenting 15-year service awards to five commissioners. He told delegates that this winter had brought Hydro its share of problems.

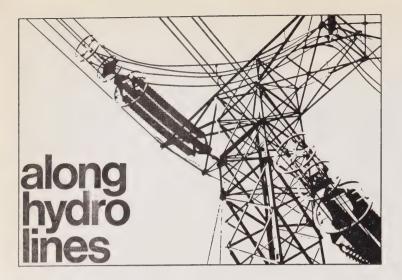
The 1967 peak for Ontario's East System occurred on December 11, with nearly 8,400,000 kilowatts. Normally the peak demand is experienced the following week, he said, but mild weather before Christmas offset this. The West System ran true to form, hitting a peak of 562,700 kilowatts on December 22.

Mr. Gathercole added that for the first time since 1957 the winter's peak demand occurred on the East System in January. A preliminary estimate for January 8 showed a combined peak on the East-West System of 9,180,000 kilowatts, an increase of 7½ per cent over that in the preceding winter. The actual demand represented an increase of 750,000 kilowatts, or 8.8 per cent, compared with the previous year.

One resolution, sponsored by the district executive, was presented and passed. It will be considered at the OMEA annual meeting next month.

W. S. Jennings, Niagara-on-the-lake, said the resolution was designed to focus attention on the importance of stating the case for independent hydro commissions, particularly in areas where regional government studies were being made.

In essence, it asked that the OMEA executive appear at regional government hearings to ensure that Hydro services and the independent commissions were given proper consideration when studies are made. Mr. Frame said that two studies were under way and the executive felt the idea of OMEA participation should be reinforced.



Back home



End of the road

Sir Adam Beck's circus made the 420-mile journey from Montreal to Niagara Falls without a hitch. But it was only during the last few feet that it really got off the ground.

The airborne route was taken to get the van back into its usual resting place — the Antique Car Museum. With millions of onlookers, the season at Expo '67 was reminiscent of the circus's original role — travelling the province, showing people the wonders of electricity.

Make it a date

Hydro people across the province have March 3, 4, 5 and 6 marked down for a date in Toronto. It's the 59th annual meeting of the Ontario Municipal Electric Association and the Association of Municipal Electrical Utilities.

Included in the four-day agenda are a screening of Ontario's Expo film and talks by John Porter, winner of the 1967 public speaking contest, and Dr. Emmett O'Grady, Vice-Dean of Arts, University of Ottawa. Discussions will cover topics ranging from manpower planning to government legislation.

Suburbia in the bush

A bush camp 700 miles northeast of Montreal will blossom into a town with all the amenities of a middle-class suburb come spring. The community will serve the work force on the multimillion horsepower Churchill Falls power development in Labrador.

Right now, the site consists of mobile bunkhouses for several hundred men. That number will swell to 7,000 during the height of construction in two years' time. To tame the rugged landscape,

the Churchill Falls Corp. will invest about \$7 million on the too site, which has been designed by a team headed by Edou Fiset, chief architect of Expo '67.

The community centre will feature a hotel, bars, restaurant nine-grade school, a shopping mall and a 200-seat auditori Wings of the complex will house a supermarket, gymnasi curling rink, bowling alley and swimming pool. Apartments single-family dwellings along with a hospital will complete scheme.

When the power development is completed, the facilities be left to a permanent population of about 1,000. It will virtually an all-electric community. Kilowatts will keep we mains from freezing and homes warm in the 55-below wire and air-conditioned in the 90-degree summers.

Site set

Ontario Hydro has taken up options on about 730 acres property at Wesleyville, about five miles west of Port Hope the construction of a power plant.

Chairman George Gathercole said intensive site investigat show the location is suitable for a station in the 2,000,0 kilowatt range. No decision has been made as to wheth nuclear or a fossil-fuelled station will be built.

Almost forever

Ice storms have no respect either for history or the national soul. At least, the January one that swept through Sout Ontario didn't.

One of its victims was the massive maple on Laing St., Torce which inspired Alexander Muir to write "The Maple Leaf Fore A heavy limb broke under the weight of the ice and came crass down, bringing a hydro wire with it. However, the city parks partment administered first aid to save the 160-year-old tree.

A plaque at the base of the maple says Mr. Muir wrote the safter watching the leaves fall.

Chummy chopper



Special delivery

"How I wish I had a helicopter," said Harry Hyde, general linguager of Toronto Hydro, as he hung up the phone and sylaround to face Tayler Parnaby, energetic CHUM news report. Mr. Hyde was being interviewed by the radio station and January's storm damage and had just heard a report from badly buffeted islands off the Toronto waterfront.

"We've got men and equipment working out there and the

badly in need of hot food," he told the reporter.

It was like rubbing a magic lamp. Within minutes Mr. Par had lined up the CHUM helicopter and the food was on its Only then did the radio man reveal his former acquaintance

ool, was a winner in the public speaking contest finals. The appetitions are co-sponsored each year by Ontario Hydro.

Itogether, the station's helicopter flew six missions to the hods with hot food. Pilot Herman Lorenz and the newscaster shown loading food supplied by a local caterer. Other meals be prepared by the CNIB cafeteria at Toronto Hydro.

oronto station CKEY also loaned its helicopter to aid hardsed crews on the islands. Ontario Hydro helicopters were y, too. They flew patrols in the London, Hamilton and Toronto as throughout the emergency.

olf on the doorstep

ce said that a lean, starving brush wolf shot on Strachan nue during the Toronto ice storm clean-up was probably a gee from Northern Ontario. They believed it may have arrived a railway flat car. Brush wolves are rare in southern climes, but eral years ago one was shot on Metro's Don Valley Parkway.

ectronic ABCs

Michael Beddoes is well on the way to producing a portable chine that will enable the blind to "read" normal everyday ted material. The University of British Columbia professor is nting on the magic of micro-electronics, and to this end he already built a prototype machine.

he machine, called a lexiphone, uses a simple sound code for h letter. Described as a "melodic morse code", it uses a nber of pitch values and tones which are varied in strength. person using the instrument must memorize the sounds. fessor Beddoes thinks a top reading speed of 80 words a ute is possible.

the micro-electronic system is mastered, the machine will be ut the size of a blackboard eraser and will fit in pocket or se. The Canadian National Institute for the Blind has made stantial grants toward the work.

persleuth



entary, my dear Watson

asn't Sherlock Holmes, Sam Spade or even Dick Tracy that ed the "lamp lifter" mystery. It was David A. Rolston, manof Goderich PUC, who apprehended the culprit.

ne mystery contest was sponsored by the lamp division of adian Westinghouse with a trip for two to Casablanca as top h. J. A. Campanaro, vice-president of Westinghouse, is shown ng Mr. and Mrs. Rolston the good news.

t engineering people from coast to coast tried their hand at ng the case of the missing light bulbs.

Utility turns landlord



Aurora sit-in



Aurora Hydro took what it had yesterday, changed it to serve the needs of today and made it pay while waiting for tomorrow. Fact is, the commission has just invested \$110,000 in a new all-electric headquarters.

The utility's old office has been turned into a spacious lobby and display area for the new two-storey building. At present, the commission only needs the first floor, so the second was converted to three apartments. These will be vacated in about five years, says Donald H. Glass, commission chairman, when more office space is needed. In the meantime, they are bringing in revenue.

Shown in front of the new headquarters with Mr. Glass is manager C. C. Copeland, left.

municipal briefs

Shelbourne Hydro System has a home of its own — one that's no stranger to electrical goings-on. Recently, the system purchased the former Ontario Hydro area office to serve growing demands. Consisting of an office and service building on three acres of land, the facilities have been vacant since Hydro consolidated operations into the Alliston area office a few years ago.

Centennial year was an underground one for Brantford PUC. In a summing-up of last year's operations, outgoing chairman R. Bruce Forbes reported that nearly 330 lots in new subdivisions had been provided with underground wiring. Of the houses completed, 95 are all-electric. Fourteen others were converted to electric heating. Windsor Utilities Commission has purchased more than \$600,000 worth of metering, substation and transmission facilities from Ontario Hydro. All the equipment is in use, serving parts of the former townships of Sandwich East, Sandwich West and Sand-

wich South and the Town of Riverside, which were amalgamated with the City of Windsor in 1966.

Farewell Ferris and Widdifield. Hello, North Bay — Ontario's largest city. With the three becoming one, the population doubled to 46,000 and the area jumped to 83,000 acres, outstripping Sault Ste. Marie, the former leader with 58,874 acres. The Ontario Municipal Board, which OK'd the merger, decreed a semi-ward system of elections. The mayor was elected at large, but each municipality chose its own representatives to council — five from North Bay, three from Widdifield and two from Ferris. Each community also elected its own representatives to the public and separate school boards and Hydro commission. At the commission's first meeting, A. W. Cooke, elected in the Ferris ward, was voted chairman. Other members are A. T. Smith, Bruce McCubbin and J. W. Chapman.

Half a century is a lot of years for a man to give one organization. So when it happens, like it did to Stan McNeil, of Sarnia Hydro, it's an occasion to celebrate. Honor went to the line superintendent in the form of a government bond and a host of handshakes. New Hamburg Hydro commissioner Leslie Bowman has retired after 16 years. His associates held a dinner in his honor and presented him with a lounge chair. Mr. Bowman is a keen supporter of hockey and was a member of the town's 1926 championship team.

H. E. (Hub) Dickson, manager and secretary-treasurer of St. Mary's PUC for 15 years, has retired. He was born in the town, and is a former mayor and member of the district high school board. Gerald Near, the utility's electrical superintendent, assumes the post of general manager. Also born in St. Mary's, Mr. Near has planned much of the utility system. The job of secretary-treasurer has been taken over by Ronald G. Carter, formerly with Goderich PUC.

A new look in letterheads is being sported by the Northeastern Region of the AMEU. Secretary-treasurer G. B. Stroud points out this is the first AMEU district to adopt the Hydro symbol, which is embossed at the bottom corner of the new stationery.

Oshawa PUC has built a 13,800-volt substation in the heart of the city's industrial area. The \$175,000 station was constructed after a study predicted rapid residential, commercial and industrial growth.

Rudy Renzius, a commissioner with Newmarket Hydro for the last 15 years, died recently. Mr. Renzius was an arts and crafts instructor at Pickering College and won many prizes for his own work. W. A. Kemp, a former mayor of the town and member of the commission, was appointed to serve out the balance of Mr. Renzius' term.

Gordon H. Fuller, a member of the Windsor Utilities Commission for many years, died last month. He was known by hundreds of utility people throughout the province as an active member of the OMEA. Mr. Fuller served as president during the 1956–57 term. Strathroy PUC has received electoral approval to increase the number of commissioners from three to five. The expanded commission is now in office.

In Strathroy, it will soon be a case of pumping water better electronically. The PUC has launched a \$415,000 program to modernize water service. Part of it will be the installation of an electronic control system under which all the utility pumps will be started and stopped by electronic impulses over telephone lines. At present a man has to be sent out to manipulate the pumps. The system, which will be controlled by punched card, is thought to be the first of its kind in the province.

Spelling bee

This time the citizens won out. Temagami, not Timagami, is the way to spell it — officially.

For more than 60 years the sign at the railway station of the Northern Ontario community read Temagami, while the sign at

the post office said Timagami. A provincial order-in-council dual January 1 says the area is "hereby incorporated as the Improment District of Temagami." Citizens were most insistent at the "e", although years ago the Board of Geographical Na decided the proper spelling of the Ojibway word for "deep owater" was Timagami.

A few months ago, citizens of Smith's Falls lost out to provincial government when the town was ordered to use apostrophe after an absence of 40 years.

Hydro veteran dies



Thomas Barnes, a man with an envirecord of service to his adopted he Niagara Falls, died last month. For all 30 years he was a member of the Nia Falls Hydro Commission.

Born in Leatherhead, Surrey, England came to the city in 1909. Eleven years he founded Barnes Electric Limited, a he was still serving as consultant at his d

Mr. Barnes was first elected to the

mission in 1937 and, with the exception of 1940, served tinuously to the end of 1966 when he retired. About half his with Hydro was spent as chairman. He didn't confine his elec interests to Niagara Falls, however. He was a faithful contribute to the OMEA and served as president of District 5 in 1954–1

Mr. Barnes found the cultivation of flowers a relaxing he He was a member of the city's horticultural society.

Lighting the way

New runway lighting and an improved instrument landing sy will ultimately enable aircraft flying into Toronto Internat Airport to land in greatly reduced visibility. The lighting – of its kind in Canada — is already in use along one of the runways.

Present regulations state that visibility must be at least 200 vertically and half a mile horizontally before an aircraft can be added weather may mean cancelled flights or diversions to airports. The new system will eventually enable aircraft under automatic control within 100 feet of the ground and a minimum quarter-of-a-mile forward visibility. If he can set runway at this point, the pilot takes over and lands the air manually. If he cannot see the runway, he punches a butter the black box, the throttles automatically advance and the air climbs away.

Experiments are under way in England in which the plant automatically guided right on to the runway in conditions of visibility. The pilot never touches the controls during the operation. It may be some time, however, before the system of general acceptance from both crew and public alike.

December energy production

Primary energy provided by Ontario Hydro in Decembe totalled 4.88 billion kilowatt-hours, an increase of 5, per cent over the same month a year ago.

For the whole of 1967, the total is 51.36 billion kilo watt-hours, up 6.9 per cent over the previous year. Ad justed for seasonal influences, primary energy deman in December was 4.42 billion kilowatt-hours, 1.5 per cent less than the previous month.

The seasonally adjusted total for December represents 52.99 billion kilowatt-hours at annual rates. The is 380.92 per cent of the energy demand in 1949.



our books, one of the biggest heroes in the attle to restore power after last month's devastating ice storm will go to his grave unwept, unported and unsung. He's the AMEU gentleman the hatched the idea of a co-ordinated helpoyneighbor approach to utility emergencies casioned by nature on the rampage. His brainfild found substance in the association's "Act of the decreations engineer in the affected region autoatically assumes responsibility for co-ordinating the counter attack. It really seems to work.

Western Region's man-in-the-slot during the y onslaught was Ward Stiles and his notes overing the emergency period read like an account by Alexander of Tunis on how the war as won in North Africa. Like the 8th Army, the sk they faced was enough to boggle the mind. Only gradually did the full impact of the damage of old. As the reports flowed in, it became opport that almost half of London was without ower while enemy elements had disrupted serve in a wide swath of municipalities and rural eas surrounding the beleaguered city. Reincreements and central direction were urgently peded.

Armed with a general knowledge of the electrial supply networks throughout the region, and ith a list of available manpower and equipment his fingertips, the operations engineer swung to action.

Aware of the range of the sleet damage, and ovided with up-to-the-minute weather forests indicating areas still threatened, he was able concentrate his calls for assistance outside ese limits. And the response was immediate.

Skilled linemen, bucket trucks and other equipent rolled in from 16 municipalities. Thirty hicles and more than 70 men responded from tario Hydro areas as far away as Morrisburg. they arrived, they were deployed to priority bjects by Hydro and the PUC.

After the main feeders were restored, the city is divided into 13 districts. Each was patrolled eet-by-street and isolated pockets of darkness ought back to life. Customers still without wer were urged to report details to the PUC ough a special phone number connected to a tery of six operators.

Mopping-up operations included the disposal

of thousands of tree limbs by Ontario Hydro mechanical chippers.

As old "stone face" might have observed, "it was a really great shew". Kudos are in order all around and to those hardy, hardworking line and forestry crews in particular. But let's not forget that little old idea man and the "Act of God" procedure. It could be a nice little bit of knowhow to have around in the event of an "Act of Man" emergency a whole lot worse. It's about as close as it's possible to come to a full-dress rehearsal.

"Wait, baby, wait" seems to be the theme of Ontario's Centennial science centre, described elsewhere on these pages, and judging by some of the press reports coming our way, it will be time well spent. Among the attractions tentatively lined up are an exhibit showing the life cycle of an aquarium of guppies; a hill of radioactive ants; a model of an Egyptian pharoah suffering from acromegaly; and a seven-foot four-inch skeleton of a Saxon afflicted by gigantism 1,300 years ago.

At the same time, the centre's world-wide search for an Eighteenth Century flea trap goes on unabated. It seems these traps consisted of a cylindrical container punched full of holes and containing a certain powder attractive but fatal to fleas. It was worn around the neck like a lady's locket so that insects strolling about the anatomy were done in upon contacting the powder.

The trap is wanted in connection with an exhibit on fleas and hormones. Women were believed to attract more fleas than men — giving rise to the suggestion that there was a connection with ovarian hormones.

In any event, the centre has been unable to locate one in spite of extensive inquiries and any lady having one not presently in use is urged to contact the assistant curator of fleas — but not too closely.

■On the municipal front, congratulations are in order for North Bay. With a wave of the legislative wand, this northern community was transformed from Grade A medium to king-sized — its territory increasing 40-fold in the split second straddling midnight, December 31, and the first of the year. As a result, it is the largest city in Ontario and the second largest in Canada.

This is not to suggest that all the new territory resembles the corner of Yonge and Queen streets in downtown Toronto. In fact, the moose hunting is still dandy and strangers are warned against venturing into the central area without compass, map and emergency rations.

Among the more interesting of the new facilities brought within the new city limits is a nudist colony. Its municipal status has not been spelled out, but if it's to be classified as parks and recreation, which seems not unreasonable, the local Hydro system is a likely administrative choice. It's been doing a bang-up job of distributing electricity and should get the hang of things in a nudist colony in short order.

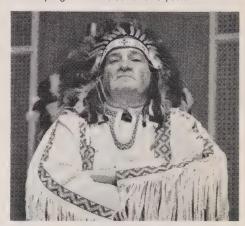
Granted, it will be hard on linemen and meter readers, who would be expected to carry out their duties in the all-together within colony limits, but the scenery should compensate for the goose-pimples. It might even prove popular for commission meetings in hot weather although the chairman might find some difficulty in maintaining the dignity of the office garbed only in a gavel.

For the sake of utility personnel across the

province, who may be making out applications for jobs in North Bay, we must emphasize that this is all speculation and that considerations such as the Public Utilities Act could torpedo the whole proposition.

In any event, with the North Bay temperature somewhere in the neighborhood of 15 degrees below zero at the time of writing, even the brass monkeys were suffering from frost-bite and coon skins will be more popular than bare skins for some time to come.

We might also doff caps to Mississauga which, with a wave of the same wand, became the largest town in the nation at the stroke of 12 on New Year's Eve. Formerly Toronto Township, the new community reports only fair to poor moose hunting and very few nudists. On the other hand, the Indian problem has been pretty well ironed out with only sporadic outbursts of hostilities and no scalping incidents so far this year.



Big Chief Megawatt of the Mississaugas gets across Toronto Township's new status.

Local Hydro Chairman W. E. Wright is under the feathers.

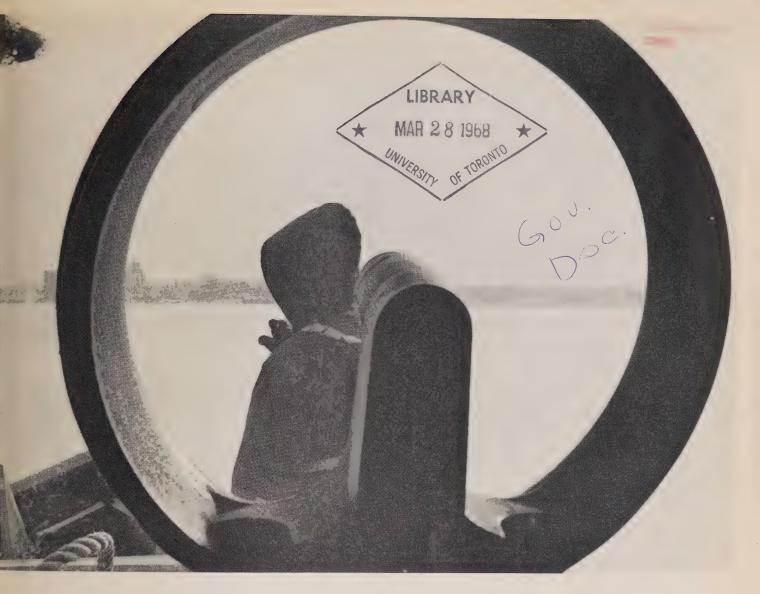
■This might be a good time to sneak in our candidate for the Centennial Medal and box of Bowser's bow-wow biscuits that go to the man contributing most to the nation's welfare at the municipal level. He's the chap who decided stop signs in North York might do a better job if they were to carry their cryptic message in both French and English.

Just how many motorists will grind to a full arrêt as a result of the addition is not yet known but it's a nice gesture. In France, of course, they're more practical. They usually settle for the word "Stop".

Also in France, we find work underway which seems likely to change world dietary habits, free-up sticky mental valves and perhaps even relieve de Gaulle stones. The world's first foodfrom-oil plant is to be constructed this year near Marseilles by British Petroleum. Initially, the food will be used for animal feeding but presumably it will be accepted for human consumption if the animals turn it down.

"Caviar and champagne, monsieur, or heavyduty detergent? I can recommend our 10W/30."





·ice hunt

the bleep makers

· town of tomorrow

ontario hydro news

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Suite for solid state circuitry
A hair-raising force
Model patient
Down with flab
Shiver me timbers
A place to grow
Along hydro lines
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the cover

Framed by the spinning disc of a clear-view window, a crewman aboard the Ontario Hydro icebreaker Niagara Queen keeps a lookout for trays left in the Niagara River to assess the formation of ice. The vessel is involved in research for the UNESCO-sponsored hydrological decade. More about its work appears on page 14.

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Whatever the impression, it's definitely not a group of fledgling may carpet pilots preparing for take-off. Neither is it a school for belliger the employees who are habitually on the carpet. It is, in fact, a beginning class in yoga being conducted at the Huron Park Recreation Certain Mississauga. There are many ways to keep in good physical shall and whether you choose to take a brisk stroll, run up a few flights stairs each day or study the disciplines of the east, it's purely a personal decision. The important thing is to be active. The human body is only machine that improves with use and today's nation of chairbook bureaucrats is suffering both physically and mentally from a general lack of exercise. A more exhaustive look at the subject starts on page



Graduate class in musical composition discuss electronic music with University of Toronto professor Gustav Ciamaga.

uite for olid state ircuitry

Harriet Law

is Riel is as much a part of revolution ay as he was back in the 1880s when red coats were chasing him across flats of Manitoba.

d you, it's revolution of a different
— musical rather than political.
adian composer Harry Somers used
tronic music — that turned on, tuned
und — to back up his Centennial year
a "Louis Riel."

tronics, in fact, has had such an let on the world of notes and scales the whole term "music" is being offined. As Mr. Somers says: "We now

think that all sound is viable material for composition. So what used to be 'noise' is now included in the term music."

The beauty of it is that you don't have to be a musician to produce electronic music. Neither do you have to be acquainted with the principles of electronics to produce the solid-state sound.

Even the language of conventional music is out. There are no andantes or fortissimos. It's composed by turning knobs on a generator or recording noises and splicing tapes. It's also the sound you get when you plug in a guitar and the amplification reverberates to the rooftops. Ordinarily, when people talk about electronic music, it's this kind of amplification they have in mind.

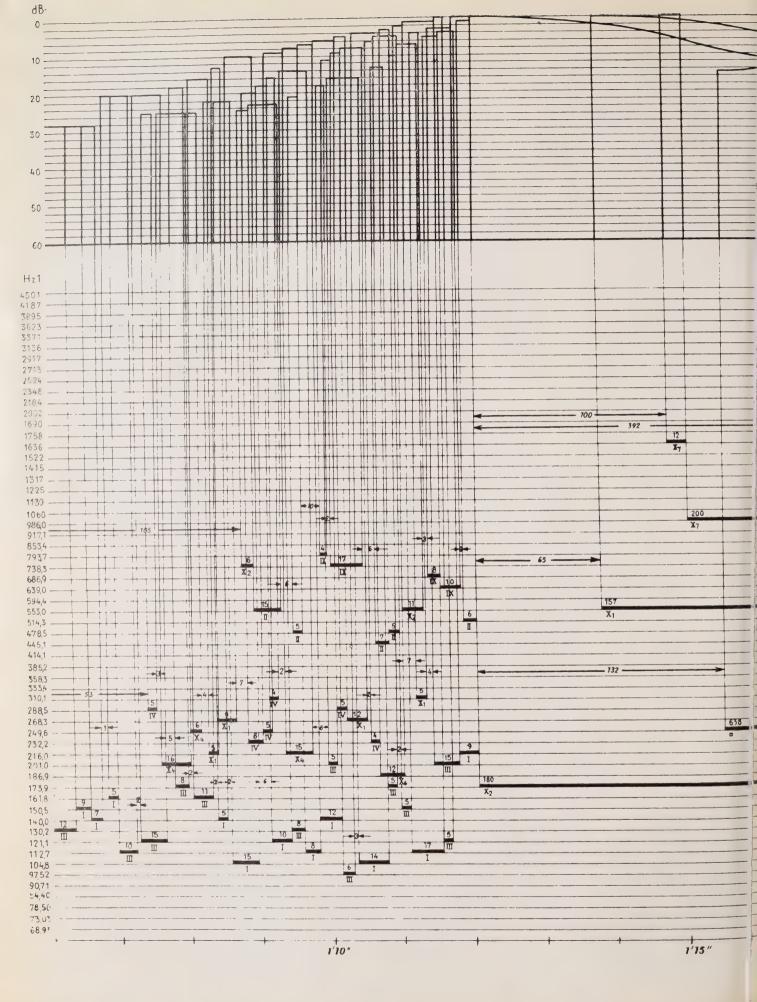
Many Canadian teenagers are busy setting up electronic studios in their own homes, using a tape recorder and microphone. They either purchase recordings of electronic sounds and experiment with these, or more ambitiously set up equipment near a noise and patiently tape it. And electronic companies are prophesy-

ing mass-produced music computers within 20 years.

For those of more mature leanings, interested in "getting with it", there are at least three ways of making music electronically.

Most electronic studios are based on tape manipulation. The tape-studio, perhaps the most widely used, is not necessarily completely electronic. A composer may also use sounds produced by conventional instruments. In "Louis Riel", for instance, Mr. Somers used transformations of gong and timpani sounds together with electronically produced tone clusters to simulate the tolling of a bell.

In most studios, sounds are recorded at various speeds and the tapes spliced to produce a desired pitch and volume. At the University of Toronto's electronic music studio, a Serial Structure Generator designed by Dr. Hugh Le Caine, of the National Research Council, takes the drudgery out of splicing. Knobs on the serial generator change pitch and





bre duration, amplitude and frequency dulation.

unds from the generator are "frozen" tape and re-recorded until a musical acture is achieved.

y graduate students attend the versity's electronic music seminars. Her universities in Canada which offer ilar studio classes are Montreal's Gill, the University of British Columbia I Simon Fraser University, also in C. Two more university studios are der construction in Quebec and Ontario ille students at the Royal Conservatory Music in Toronto have an electronic sic laboratory.

ducing electronic music is timesuming. It once took U of T research
ociate Lowell Cross a week to produce
seconds of sound track for a film.
me sounds are strictly imitative — a
noosh" for a rocket leaving a launching
I or a "shhhhhhh" for steam. Other
nds may be more symbolic. When
Cross wanted to portray molecules, he
abolized them by a triad of bloopop-bleeps.

e example of the many types of elecnic sound producers is the "white se" generator. White noise is analogous he color white in that all sounds of audio spectrum are produced in a ally random way. However, as a prism ars color, so the generator filters sound.

other method for producing electronic sic is with a computer into which the aposer feeds a code so arranged o produce a certain pitch, timbre and hm. The computer tape is then fed into analog converter which transforms track into a series of voltage valents on musical tape. However, when the tape is played back will the poser know the total effect of the position.

A third method is with the RCA Synthesizer, a complicated machine with a keyboard. There's only one and it's located at the Electronic Music Centre in New York City. As the musician composes, the keys punch holes in a roll of paper which moves into contact with metal brushes. Once contact is made through the punched holes, the circuit is completed, turning on and off the mechanical means for instant production of sounds. By this method, the composer hears the effect of his work instantaneously. However, for concerts or reproduction, the music must be taped.

For the amateur who would like to produce electronic music in his own home, there's a fourth and simpler way. Says Professor Gustav Ciamaga, of the University of Toronto Faculty of Music: "Get a microphone, some tape, a tape recorder, a splicing block for editing and sticky tape to aid in splicing. Record some sound, and then organize it into a meaningful pattern."

He adds: "Electronic music got started in precisely this humble manner — playing the tapes faster and slower, lopping off ends of a sound, reorganizing it... You can also purchase recordings of electronic sounds and sound effects."

The fascination which electronic music holds for many is its high degree of "controllability". A pioneer of electronic music, Karlheinz Stockhausen, felt that electronic music gratified a desire for complete control and organization of all aspects of sound. Electronically-produced



U of T seminar gets down to the actual task of composition. One of several forms of electronic music notation is shown, left.



music also makes it possible to organize all aspects of existing sound to a degree that was impossible with conventional instruments. Electronic music, he found, was an adventure.

Professor Ciamaga agrees. "The electronic musician has fine control over sound and time," he says. "He knows he can compose a piece to last precisely four minutes and 69 seconds and, unlike an orchestral composition, it will take exactly that long each time it is played. And while in conventional music the conductor and the performers are subject to a variety of human moods, errors and inspiration, the results of an electronic music performance are thoroughly predictable!"

What gave electronic music a boost was the commercial availability of the tape recorder after World War II. At the same time a music style was being evolved — called the post-Webern period — which

had an affinity with the disconnected sounds in electronic music.

This musical style was based on Schoenberg's and Anton Webern's use of the 12-tone scale compared to the familiar eight-tone or octave. It was characterized by a discontinuity of style to which electronic musicians were sympathetic. What the 12-tone musician and many electronic musicians had in common, then, was the "serial" method — an elaborate approach to composition in which the composer can control timbre, pitch, etc., according to arithmetic plans.

Says Professor Ciamaga: "Older people find little to hold on to in electronic music. It seems to negate the theories of melody and harmony which have been around for a long time. But there is really no good reason to write in the style of Brahms for a tape recorder."

Toronto psychiatrist Dr. Andrew Malcolm believes electronic music has become a critical part of our culture. It has, he says, to some extent defeated and replaced jazz and may eventually evolve into something else again. He derides critics who say continual exposure to electronic music may have an ill effect on adolescents.

"Certainly electronic music, like all music, is a stimulus. People respond to music as they have from the early days of tomtoms. Music, after all, evokes emotions. But a constant bombardment of music didn't hurt people like Toscanini!"

And what of the future? The availability of electronic equipment may draw still more amateurs into the field of electronic music. Mr. Cross, who assists Mr. Somers when he visits the U of T studio, predicts that electronic music will become popular through the use of the record player. He feels electronic music listeners may prefer their home to a concert environment. As young people continue to experiment, the record companies will expand their selections.

Mr. Somers argues that as a concert-stage vehicle, electronic music still hasn't worked out an acceptable format. It lacks the theatricality of the conductor and his orchestra.

"You can't very well lug a generator into a concert hall," he says. "And a tape recorder on stage looks pretty forlorn, even to the most ardent coterie of admirers of electronic music."

Mr. Somers believes, however, that future musicians will use electronic music as a device to "utilize accoustical space and to alert the audience".

"Like Haydn's Surprise Symphony", Mr. Cross injected. And they both smiled, and nodded to each other.

Pipe-smoking composer Harry Somers wo with research associate Lowell Cross on background music for a TV film.

anything goes

"Anything goes," crooned the crooners back in the days of those square-type hits which had a distressing habit of setting feet tapping and even motivating the occasional person to whistle.

Of electronic music, it might also be said that anything goes, although one cynic has observed that the composers have apparently extracted the taps and whistles and discarded the remainder. Electronic music may, in fact, range from a coherent pattern of liquid sounds reminiscent of water drops to the noise of an apparent herd of hippos with indigestion.

It may manifest itself in a high-frequency shriek of anguish or in snipped-off syllables of the human voice. It may also be served up with a finger-snapping beat and full of melodic forms unobtainable on any conventional instrument.

If you want to hear it for yourself, go to the local record store. There you may browse at random through such fascinating titles as "Musique Experimentale," "Electronic Pop Music of the Future," or "A Poem in Cycles and Bells for Tape Recorder and Orchestra."

Electronic music is undoubtedly established as a serious art form. It has been around in its present state for about 20 years. In Canada, it has been used with great effect in everything from Expo '67 to Shakespearian tragedy. It is an ideal tool for the composer, who can obtain desired effects at the flick of a switch.

Many prominent musicians are now studying and employing electronic music. It's significant, though, that one of Canada's most successful and prolific composers, Dr. Hugh Le Caine, of the National Research Council, is first and foremost an engineer.



by Les Dobson

Shuffle across the broadloom in carpet slippers on a dry winter's day and chances are you're in for a shock. Slide out of that nylon shirt in a darkened room and you're treated to all the crackle and splendor of a miniature pyrotechnical display.

The answer — as any grade seven student knows - is static electricity. It's a potent force, but not much has been done with it. Most approaches have been negative -- being devoted to preventing an electrical discharge that can be both frightening and dangerous.

Static electricity has been blamed for starting fires during the refuelling of aircraft and for blowing up a patient on the operating table. Workers in industrial plants generate static, particularly when close to machinery. And the mere action of walking can build up a potential of several thousand volts.

Hospitals take elaborate precautions when there is a possibility of chance sparks igniting anaesthetic gases. Conductive materials are used in the operating room and the air humidified to prevent static from building up. All equipment is grounded and in some hospitals doctors and nurses are even required to wear conductive footwear. Of course, the chances of an explosion are remote and occur at a statistical frequency of only one in 80,000 to 100,000 anaesthesias. Even greater safety is being achieved with the increased use of non-flammable anaesthetics, but there is always the onein-a-million chance of a surgeon receiving an electric shock just when an involuntary movement on his part might have dire consequences.

Gasoline trucks usually have tires of conducting rubber to drain off any charge which might ignite their cargo. And it was static electricity that turned the hydrogen-filled dirigible Hindenburg into a blazing inferno as she docked at Lakehurst, New Jersey, in 1937.

Electrical phenomena were known long before man learned to put them to practical use. The Greek philosopher and geometrician Thales of Miletus knew in 600 B.C. that amber subjected to friction would attract light objects such as feathers and straw. William Gilbert, physician to Queen Elizabeth, named these qualities of attraction electric, after the Greek word for amber - electron.

Numerous friction machines were built to produce static electricity. A shocking fad developed in France's royal court in the early 18th century when nobles and their ladies passed the time between affaires d'amour by giving each other merry little jolts on an electric machine. But the strange force remained largely in the cloistered world of the laboratory until the first crude batteries and generators could provide current with a continuous flow.

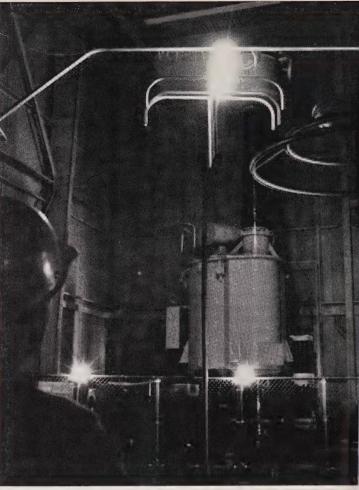
Lightning, of course, is one of the most blatant examples of the power and wastefulness of static electricity. A lightning flash is nothing more than a spark between cloud and cloud, or cloud and ground. Some spark, though.

In one ten-thousandth of a second, a typical lightning bolt expends sufficient energy to rocket tions puny by comparison.

a 100-ton object 5,000 feet into the air. The stroke may be in the order of 100 million volts and may develop 3,750 million kilowatts. Such figures make the output of our most modern power sta-With good reason, primitive peoples usually equated thunder and lightning with their gods. The Ancient Greeks declared it was Zeus; the Romans plumped for Jupiter. But the prize for







Huge charges of man-made static are generated in Hydro's high-voltage testing and research laboratory. Area is used for rigorous trials of electrical hardware and study of high-voltage phenomena.

originality must go to the Tlingit Indians on the northwest coast of North America. Their theory was that lightning emanates from the winking eye of the thunderbird.

Luckily for us, Benjamin Franklin survived the experiment of flying a kite in thunderstorms to establish the connection between lightning and electricity.

Most contemporary lightning theories are based on the fact that turbulent air currents and rapid changes of altitude subject water drops to disintegration and rapid temperature changes. Such conditions are known to produce separation of positive and negative electric charges. Ontario Hydro helps to protect its transmission lines from direct hits by stringing a skywire above the line. This shields the lines by attracting the lightning stroke and directing it straight to the ground through the tower. Tower footings go down seven feet. Steel rods are often attached to these footings and driven down 30 or 40 feet.

What exactly is static? Well, a capsule explanation might be that any two surfaces brought into close contact will assume a condition where the numbers of electrons and ions are not equally distributed between the two surfaces. If the surfaces are both good conductors, this distribution will equalize itself before the surfaces are separated. If even one surface is an insulator, however, the

equalization of charges is impossible. Separation may cause a spark.

Under controlled conditions, static electricity can be an extremely valuable tool. Among its principal uses today is the creation of high-voltage fields to test the effectiveness of such components as electrical insulators and condensers.

Ontario Hydro's high-voltage testing laboratory in Etobicoke is a case in point. Here engineers subject pieces of hardware to fierce electrical storms in the order of a million volts and more. If they withstand forces like these, they'll do pretty well in service. If an insulator breaks down under testing, the pieces are apt to fly around like shrapnel.

One way to create high voltages is by a Van de Graaff generator, a machine which builds up an electrical charge on a terminal by transferring the static along a moving belt of insulating material. Such generators are used to accelerate charged particles through vacuum tubes and find application in nuclear research, X-ray therapy, industrial radiography and the sterilization of food and drugs. Although not strictly electrostatic devices, the precipitators that separate suspended matter from gases nevertheless make use of the basic attraction between positively and negatively charged particles.

Electronic air cleaners used in the home and the precipitators installed at large coal-burning power stations work along these lines. They first impart a charge to the suspended particles and then attract them to plates or wires carrying the opposite charge.

Precipitators at Ontario Hydro's Lakeview power station, for example, are designed for 99.5 per cent

efficiency. Of the 200 pounds of fly ash proby burning a single ton of coal in one of view's giant furnaces, only one pound escapes up the chimney.

Static phenomena verge on the weird and times the mystical. Static electricity can make hair literally stand on end — large charges individual hairs to repel each other and the duce this hair-raising effect.

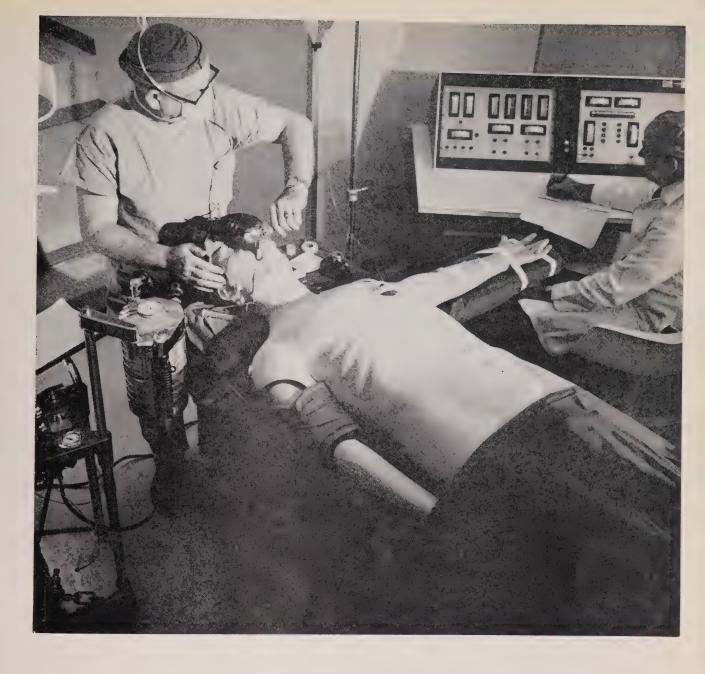
Years ago, frightened sailors named the pluish light that sometimes danced along masts St. Elmo's fire. Occasionally, from the deck of a modern jetliner, the crew will so same blue flame play along the wings. It sharmless static, but it can still be slightly unnot

An amateur scientist down in Denver, Co a recently reported that flying ants give off in the presence of static electricity. He prov by gluing 24 of the insects around a ping-pc then cranking a small generator.

The investigator, who works for the U.S. logical Survey, says the ants may pick up teither on the ground or while flying thresh thunderstorm and believes that such g. warms may account for some of the C. American sightings of UFOs.

Finally, a Bulgarian-born scientist, Dr. Cristov, has developed a black box device claims will fend off indoors fatigue. It does creating a positive electric field which duthe electric field out of doors. His invent been used secretly since 1959 by the U.S. agency, by the U.S. Air Force for its Uplanes and in submarines.

Sounds as though the age-old science (the electricity may really be on the move.



model patient

Doctors at the University of Southern California administer anaesthetic to a VIP (Very Important Patient) known as Sim One. Actually a computer-controlled patient simulator, the robot is an outstanding example of the way in which electrical and electronic devices are aiding modern medicine.

He has a heartbeat, carotid and temporal pulse beats and blood pressure. Movements of the diaphragm and chest simulate the action of breathing while the eyes open and close and the pupils dilate and constrict. All of which makes Sim One the most complex medical teaching tool devised.

The lifelike patient was developed by university doctors in Los Angeles working with engineers of the Aerojet-General Corporation. He will be used to train resident anaesthesiologists.

Computer-programmed electronic systems activate the robot to simulate the symptoms likely to be

encountered during an actual operation. He is further programmed to provide appropriate responses to the injection of four different drugs, given in varying doses, as well as the administration of both nitrous oxide and oxygen.

While students work on the simulator, their instructor monitors each step on the console nearby. The instructor may stop the operation to talk with the student and can also override the automatic responses of the computer to introduce problem situations such as changes in heartbeat, blood pressure or respiration.

"The educational potential of the simulator is enormous," says Dr. Stephen Abrahamson, one of the co-directors of the project. "Not only is the system designed to allow us to halt the procedure at any time, we can also call upon the computer for a print-out of precisely what has taken place up to that point."

Perhaps the greatest value of Sim One is his ability to demonstrate and repeat as often as desired the rare emergencies that occur during surgery. He's such a model patient, in fact, he could well be the first of a whole new generation of VIPs.



Alexis Lapointe's bones lie in a brown abag in Ottawa University. Lapointe, nicknamed "Le Trotteur", was a pse legendary runner from Quebec. Loc claimed he out-ran the fleetest of he and jogged 160 miles without exert thimself.

At the age of 64 he was run over by locomotive. Quick on his feet — bu quick enough — Le Trotteur was rac



in when he tripped on a railway tie. day, scientists are studying his remains tha view to keeping men alive longer keeping them physically fit.

ness-wise, the average Canadian male a far cry from Lapointe. He has been scribed as over-tired, over-fed and er-stimulated; and in the under departent, he's under-active, under pressure d far under his potential for living.

et out and get more exercise, doctors d physical education buffs have pleaded years. For half the nation's annual ath toll is from cardiovascular disease.

D. K. Grant, Ontario Hydro's director of edical Services and a longtime advoce of more exercise and less food fats, is heart disease is difficult to control cause it takes 20 years or so to become parent. Doctors now suspect the ease begins in the teens. In terms of and circulation, many men enter middle in their 26th year. At 18, blood flow is proximately 25 cubic centimetres per e of muscle. At 25, there's a 40 per at decrease. And it gets worse with age.

tch of the blame for the sorry physical te of our young people must surely rest the parents. However, critics point the school system that has only recently come aware of the general lack of dent fitness. In many public schools re were no trained instructors, and in h schools little effort was made to teach student fitness habits that could be attinued throughout life.

ppily, things are changing. High school letic programs that sacrificed the needs all the students for a few dozen football basketball players are now unpleasant mories.

many youngsters, sitting all day studying at night creates a condition prolonged inactivity, which eventually uses weaker muscles, smaller, less cient hearts, increased pulse-rates and ecrease in bone calcium.

ney weren't so obviously young, the dition could be described as an aging cess. As it is, doctors are beginning uspect that even old age's shaky hand tottering gait are more from lack of cise than the passage of time.

tivity causes tiny blood vessels called rioles and capillaries to deteriorate and strict. Exercise vigorously and nerve Irils dilate your blood vessels which fill with blood. Inactive people's blood vessels have no reason to open, and the heart works harder because the system is half shut down. Big muscles literally fill with sludge, then blood pressure goes up and nervous tension begins to mount.

Unlike an automobile, there isn't a can of de-sludger for people. But don't despair — endurance exercise, such as plenty of walking, running or swimming, will form new blood vessels and activate those closed by sludge.

Exercise keeps muscles strong, bodies flexible and hearts healthy. After all, the heart is, or should be, one of the strongest muscles in the body. Exercise will make it strong. An efficient, healthy heart is able to move large amounts of blood with little effort. In fact, it's the toughest most reliable pump in existence. But it depends on two small tubes — no larger than drinking straws — called the coronary arteries for its blood supply. In sedentary types these arteries are often affected by corrosion (atherosclerosis) resulting from fatty deposits on the arterial wall.

Assisting the heart, the leg muscles act as a second pump. Veins in the legs have tiny valves and, as well, are threaded through muscles. When a leg moves, muscles squeeze the veins and push the blood upward to the abdominal cavity.

Here the diaphragm takes over. Breathe in and it flattens down hard, squeezing blood up to the entrance of the heart. Of course, the bigger the coronary arteries, the easier it is for the heart to keep pumping.

Clarence DeMar, a US athletic and medical wonder up to his death in 1957, had coronary arteries two or three times the normal diameter. He ran 12 miles a day and competed in his first marathon in 1909 and the last in the year he died. He won the Boston 25-mile race seven times, ran it 34 times and at age 65 finished 78th in a field of 133.

He looked like a Walt Disney caricature. His pants were held up with safety pins and he wore floppy sweat-shirts. He shuffled when he ran, and his white hair stood upright in the breeze.

Novelist Thomas Wolfe described him as one of those knobby, varicose, old men who come from some place in baggy shorts, every year, to run through the streets in an earnest accomplishment against the tide.

After he died, DeMar's coronary arteries were studied. Active as he was, there were deposits on the walls of the arteries — but there was plenty of room for good blood circulation.

No one would sanely advise men over 40 years old to emulate DeMar unless they





Whether they're six or 60, people are emphasizing fitness more and more — fighting the flab of a sedentary era. The methods are many including pounding the boards of an indoor track, paddling in pools, graceful calisthenics, group games and the gentle art of judo.









are in good physical condition. An extensive medical examination should pre-date any high-endurance exercise. Following the medical, a fitness test by an accredited gym, such as the YMCA, will show a man his rating.

Tom Potts, YMCA fitness director in Toronto, says he stresses all-round fitness, strength and flexibility in exercise programs. As well, they draw up a fitness program to suit the needs of the individual and keep a regular account of his progress.

According to Mr. Potts, the easiest part of the program is losing weight. "Controlled eating is the answer," he says. And he advises people to count calories for a couple of days then taper off calorific intake proportionate to the need. The Toronto YMCA has a full run of equipment, as well as sauna baths, pool, race track, lounge facilities and massage and sun lamp treatments. Currently, they have about 30 cardiac cases sent to them on doctors' advice. In fact, there is a trend now among physicians to promote distance running for men who have recovered from coronary artery disease.

Around the province there are some luxurious places to exercise. That old Hollywood image of the prize-fighter's gymcomplete with bare lightbulbs, bookies and punch drunks has been shattered forever.

Recognizing the importance of physical fitness, Ontario Hydro has placed the emphasis on exercise at the new community building at its Abitibi Canyon townsite, 70 miles north of Cochrane.

The building includes a large indoor rink for ice hockey and skating, an adjacent curling rink, bowling alleys, a gymnasium and a swimming pool. It will serve about 700 Hydro personnel and their families, providing a year-round opportunity for recreation and exercise.

Many housewives are fitter than their executive husbands. But Maria Grunsky,

a YWCA fitness director, thinks that European girls have the edge on their Canadian counterparts. Physical fitness is part of training from an early age. In contrast, Maria says, many of the girls who come to her YWCA classes are tense, nervous and have no appetite. She complains that the girls don't come for fitness, but to lose weight.

Today's woman has a complex, she says. They don't wart to look good — they want to look skinny.

"A girl comes to me. She is five feet, eight inches tall and weighs 100 pounds. She wants to lose weight. Already she looks like a pencil.

"I think a man wants a woman," Maria added, "not skin and bones."

Among communities that have become fitness conscious is the town of Mississauga, Ontario.

Its Huron Park Recreation Centre is a slick but spartan cultural centre that's been operating about a year. Combining keep-fit and cultural themes, there are facilities for an estimated 160 activities. The three-building centre, on 55 acres of valley parkland, is surrounded by football and soccer fields, baseball diamonds and tennis courts. By 1971, bowling greens and botanical gardens will be added.

The 1,000-seat arena is used by 3,200 minor hockey players and there's a full complement of ice-sports as well as roller-skating and lacrosse. Socially, the arena backdrops dances, fairs, musicals and concerts.

There are six refreshment areas throughout, ranging from snack areas to dining room size. As well, there's an outdoor patio cafe to add summertime charm. The athletic wing is fully equipped — every conceivable indoor activity can be played there — squash, swimming, handball, judo, yoga, sauna, sunlamp. The list is endless

Five thousand teenagers a week come to Huron Park, according to administrator E. D. Marshall. Dances are a big attraction and good exercise, too. But Mr. Marshall finds the music different. "A four-chord deal," he says, then brightens with "I wonder if they know what an octave is?"

In a few years, perhaps, after we get around to teaching future generations about physical fitness, maybe there'll be a crash program to teach them about octaves. Or is that just wishful thinking?



shiver me timbers!

by Hal O'Neil

It's three o'clock in the morning. But it's neither a wonderful time nor a wonderful place for that matter.

Not when it's winter and the place is aboard "Little Toot", bobbing about in the middle of the Niagara River with the temperature anywhere between zero and 15 degrees. And just to add to the occasion, the wind is puffing at 10 miles an hour.

All this is in the interests of pushing back the frontiers of science and knowledge. Back in 1963, the United Nations Educational, Scientific and Cultural Organization (UNESCO) sponsored a world-wide 10-year assault on hydrological problems.

The improvement of living standards around the world coupled with a constantly increasing population have put the emphasis on water. Industrialization is another reason. It takes 220 gallons to produce 20 pounds of steel or even 15 pounds of paper.

Hydrologists know basic things such as the fact that there's no new water. It just moves in a cycle from atmosphere to ground in the form of rain or snow and eventually back to the atmosphere. But they don't know how to control its movement, or even how much water there is around — vast underground reservoirs have never been estimated.

It was felt that progress in the field had fallen behind that of other branches of science, and that hydrological problems

were becoming acute. The organization estimated that the demand for water would double in 20 years. UNESCO picked the period from 1965 to 1974 for the study and now there are nearly 60 nations participating.

As one of these nations, Canada has studies in progress from coast to coast. Ontario Hydro accepted two projects — one dealing with the study of river and lake ice, the other with the effect of aquatic growth on the discharge capacity of tunnels and canals supplying hydroelectric stations.

Up to now, the aquatic growth study has been one of measurement. It's now evident that submerged weeds or other aquatic growth reduce the summer flow at the Niagara River power stations by five per cent.

The ice study proposal made by Hydro was with particular reference to the "formation, movement and dissipation of ice in rivers." It was decided to limit observation, at least initially, to ice in the Niagara River between Fort Erie and the Grass Island Pool. Special attention is being paid to the formation and action of anchor ice and its effect on river flow.

As the name implies, anchor ice forms on the bottom of a river or lake. Under the right conditions, enough of it can build up during the night to cut back the flow of the Niagara by 25 per cent, or 50,000 cubic feet a second.

Last year's activities were of an exploratory nature. Methods and procedures were developed on a trial and error basis.

In making the study worthwhile, a lot of people got into the act. The meteorological branch of the Department of Transport provided Hydro with special instruments, in turn receiving water temperature records for another UNESCO study. Aerial photographs and other ice observations are being provided by the Power Authority of the State of New York.

A number of Hydro departments are co-operating on the project. Together they are developing programs, carrying out

experiments and analyzing the resulti data. Apart from other assistance, Ni Region personnel are providing "Littl Toot" — the icebreaker formally know the Niagara Queen — for hydrologica work. A helicopter has also been use-

Hydro's Research Division is now in picture and is developing equipment measurements. It is also looking into possibility of constructing a model "river" in which anchor ice could be induced. This would perhaps help e why and how anchor ice forms. As ye one has provided the answers.

Mind you, there are plenty of theorie Engineers like Tom Wigle and Bob & who have been doing much of the observation and testing work aboard Niagara Queen, know many of the conditions under which anchor ice for Basically, the night must be clear, with the air temperature below 15 degree and the water temperature at or near freezing point.

As yet, the effect of water velocity is clearly understood since anchor ice in water flowing at two feet a second even four or five feet a second. One odd discoveries is that in certain second the river the anchor ice doesn't for despite apparently ideal conditions.

The time of maximum build-up is about the some hour before sunrise. Conversely is the least volume of ice about the sout time before sunset. This holds true of clear nights and days. When it's cloud cold and windy, a great deal of ice builds.

And if there is a succession of such the situation gets progressively work

Studying anchor ice has been a pior effort. As far as is known, only one o

bbing around the fast-flowing Niagara in search of the hows, whys and wherefores of anchor ice calls for the terms of nerve and even more patience



study of the phenomenon was made and that was back in 1928. It dealt with streams flowing into the St. Lawrence.

So Hydro engineers were left to devise their own equipment. What they came up with might almost be termed fishing gear for ice.

It consists of three main pieces of equipment — an anchor, float and tray — strung together by rope. Set out in the river, the arrangement looks like an inverted "V" with the anchor at the bottom of the upstream leg, the float at the surface and the tray at the bottom of the downstream leg.

The idea is that the anchor ice, under the right conditions, will form on the collector tray. And it does. Last year, as much as three cubic feet would form on the 30-inch angle iron and chain link devices. Although this mass of ice floated the tray to the surface, it was impossible to lift it into the Niagara Queen for close study. This winter the trays have been reduced to 18 inches for easier handling.

Last year, the trays were spread along the river, using the icebreaker as an operations base. They were put down one day and retrieved the next. The Niagara is a shallow river, seldom exceeding 30 feet, and the trays were located in the shallower areas at a depth of 10 to 15 feet.

This winter, the trays have been set out in lines across the river for the 18-mile length under study. In this way, an effort will be made to determine a shore-to-shore pattern in the anchor ice formation.

On a good growth day, not only the trays are covered in ice, but the ropes themselves — as much as 18 inches across. The ice on the trays differs from bottom to top, with the lower flakes or crystals looking larger and clearer. The ice on the upper portions appears frail. Gravel,

up to almost an inch across, is found sprinkled through the ice in each tray.

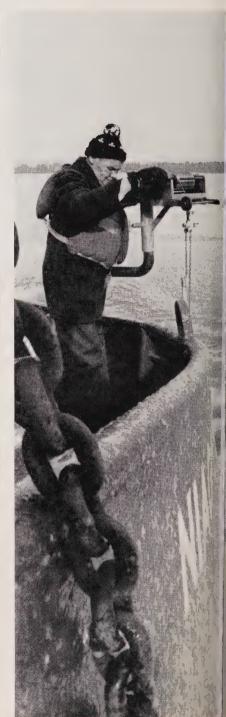
The ice-tray study is not without misadventure. Trays get torn away, thermometers freeze up and sometimes it gets downright humorous — especially in the fast-moving water around the Peace Bridge between Fort Erie and Buffalo.

The icebreaker crew and the engineers drop the tray anchor and everything's fine. Then the float goes over and everything is still OK. But when the tray is dropped in, the entire menagerie disappears, float and all. A few minutes later, the float will bob up on one side of the Queen. By the time captains Bob Kerr or Eli Sawyer manoeuvre close to the float, down it goes again. This back-and-forth routine may be repeated several times before the device is retrieved, the ropes lengthened and the gear put overboard a second time.

Observations are also being made of the river's surface ice, to see if there is any connection. Hydro men working on the project know that anchor ice affects the surface volume, since it comes up in the daylight. Mats as big as a barn door break free of the river bed when the icebreaker is run back and forth over a particular spot. Presumably this happens naturally as well.

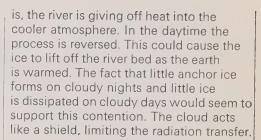
Twenty different instruments are being used in the study to measure everything from the wind-chill factor to radiation of heat between the atmosphere and the river. Observers are beginning to suspect there's a definite connection between radiation and formation of river bottom ice.

Bob Arden points out that at night, when the ice forms, radiation is negative. That





There's no time for standing around on the deck of the Niagara Queen when she's hunting anchor ice — not that anyone would want to in the biting cold. Among other activities, a thermometer has to be lowered into the water, trays hoisted aboard and then set in new locations with a heavy anchor to hold them stationary against the current.



Night-time safaries on the river are a new twist this season. Through the use of an underwater viewer and searchlights, observers hope to catch the anchor ice right in the act of growing. The viewer, a long glass-bottomed pipe slung over the side of the Niagara Queen, can be held within inches of the shallow river bottom. It's even possible to obtain photographs through it.

Hydraulic engineer J. B. Bryce, who is co-ordinating the two project teams, says that if the winter study makes it possible to predict ice formation, it will mean more efficient power production. Operations engineers, knowing that flow would be reduced at the Niagara or other hydroelectric stations, could have thermal stations standing by to take up the slack.

"At Niagara, the formation of ice can mean the loss of one million kilowatts between Hydro and the Power Authority of New York State," Mr. Bryce says. Countries like Iceland, which experience similar anchor ice problems, may also benefit from the study. The team hopes it may even come up with a method of aborting ice growth

So far, the project team has produced a report one-inch thick. It covers only the observations, measurements and projections of the first year of study. But those inches, piled one on top of another during the years of the hydrological decade, will mean a lot of yards gained in learning more about one of man's most precious commodities — water.





a place to grow

by Ted Leather

In Mississauga, the wide open spaces of a farm contrast sharply with the modernistic municipal offices.





Ontari-ari-ario welcomes the nation's newest and largest t



Elmer Wright

It was August 2, 1805. British gover officials and colonists met chiefs Mississauga Indian tribe to purchas of the lakeshore to a depth of five miles between present-day Toroni Burlington.

Thirteen years later, much more Mississaugas' lands were bought, plack the boundary 25 to 50 mile the lake.

Last new year's eve and 150 year Mississauga chief George King and members of his tribe attended cere marking a change of name from Township — a part of that historic put to Mississauga.

It's more than just a change of a however. Mississauga is now Callargest town, a go-go communal 107,000 people scattered across 103 miles. It includes such centres as Cock Clarkson, Lakeview, Erindale, Meador Churchville, Lorne Park, Dixie, Buthorpe and Malton. The new tow rounds the existing communities Credit and Streetsville, which retailed.

"The population now is about 1 but by 1980 we foresee an increase 320,000," says Reeve Charles "That's the latest prediction and revised figure. Other forecasts were checause they were too low.



les Murray



Ken Rowe



Bert Fleming

n fact, the estimate of 320,000 might to be revised upward in the next ection," he adds.

rowth is coming and Mississauga is t in its path. "Only 20 per cent of sissauga is developed," Mr. Murray but we border on Metropolitan Toronto the nearest community, Etobicoke, is up. The growth will move on into town's area."

ne town's population has increased by 200 in six years — a rise of 64 per cent. In with this rapid growth, the assessthat kept a good balance of 56 per cresidential to 44 per cent commercial industrial. A 9,000-acre development in the northwest section will be cat a 50-50 balance by agreement with subdivider.

ne enthusiast for industrial growth in issauga is Ken Rowe, the town's strial commissioner. He sees his job at of a go-between assisting interested stries to obtain information and then ing them get required servicing from itilities and town departments.

Rowe says there is no single factor draws industry to a particular location, he refers to Mississauga's position in on to "a large magnet to the east"—
Toronto.

le have land, and cities in North ica tend to grow westerly," he says.

"Mississauga is in the path of this growth."

Mr. Rowe can quickly list the advantages that Mississauga has to offer. "We have a highway system second to none and two major railroads go through the municipality. An international airport is also in the town. Not every industry is concerned with this, but with the growth of American industry the proximity of the airport is an advantage.

"We can offer good residential areas and a good school system that is producing a greatly enlightened work force, particularly compared with 15 years ago," he adds.

The future of Mississauga undeniably includes growth. But one large and immediate question faces the town: what form will regional government take in the Peel County area?

The regional government question is in the minds of all town officials. The problem was examined in the Plunkett report issued in September of 1966, a joint effort between Peel and Halton counties and the Ontario government. The report envisioned an urban county in the south — formed from parts of the two counties — and also the formation of a northern rural county.

"Most municipalities in the area disagreed with the report," says Charles Murray. "The County of Peel is now working on a regional government plan. We feel we can keep the County of Peel as a

region, but there is no doubt that some form of regional government will come to the area."

Mississauga Mayor Robert Speck has said that the Peel plan will be presented to the provincial government next year.

"The hope is to head off any provincial action that might force the county to accept a type of regional government that elected county officials won't like," he says.

Elmer Wright, chairman of the town's hydro-electric commission, sees nothing sacred about present county boundaries, particularly where they arbitrarily cut through communities.

"They are the result of surveys long in the past," he says. "If we can solve presentday problems by shifting boundaries now, I'm sure our forefathers would want it done."

Mr. Wright agrees that modernized government is necessary to face the problems of development.

"I would like to see better organized development, although there will be pressures from industry and subdividers," he says. "Too often in the past, our actions have been a case of 'too little, too late'."

Questions of future growth and the possibility, almost certainty, of amalgamation also face the Hydro commission. Representatives of Hydro commissions in Peel County recognize that the pooling of









resources can bring about savings and better service. They have held several meetings to develop closer working arrangements and expect to resolve which area, or areas, should be unified through regional government.

Bert Fleming, Mississauga Hydro's manager, sees no big problem in a county system. "We aren't going to remain the community we are today," he says. "Council is working to encourage industry here, and the population is growing."

The commission had a 1967 peak demand of 160,000 kilowatts. Looking a short distance ahead — to 1972 — it has projected a peak of 290,000 kilowatts.

Mississauga's council is looking to an immediate problem in the forecasting game. The McLaughlin Group, a large developer, is working on a multi-phase complex called the Mississauga City Centre, a short distance from the present town administrative buildings. The developer is interested in having civic buildings on the site, although it would mean abandoning the present site on Highway 5.

No details of the offer are public yet, but Reeve Murray outlines what sort of a guessing game the council faces.

"If we thought the present site would be quite adequate for another 25 years, we might be better to stay," he says. "If not, it might be to the town's benefit to make the move."

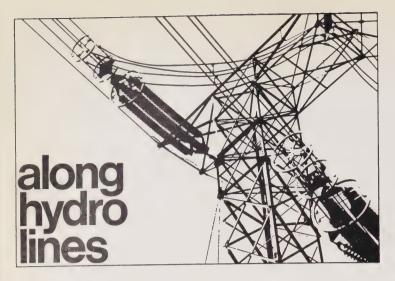
Mr. Wright has stressed the urgency of providing additional administrative space to meet future growth. Two years ago, the commission needed 25,000 square feet. Now they need 30,000. Property has been acquired next to Confederation Square, but the location of new offices will depend on the ultimate area they serve.

It's all a far cry from the time when settlers first moved into the area after the purchase from the Mississaugas. Early industry boomed then slumped in Toronto township as its neighbor to the east — the one with the same name — sprang to prominence.

The township bore the name first and its use by the city still hasn't been forgotten.

"They stole our name," says Mrs. Mary Fix, a former township reeve and warden of Peel County. "If they hadn't, we would be the town of Toronto and they would be York."

Ontario Hydro's Lakeview generating station, an aircraft manufacturer, British American Oil's Clarkson refinery, an international airport — name it and Mississauga has got it.



In the centre ring

Electrical utilities across Canada were this month sponsoring an hour-long telecast of the Ringling Brothers, Barnum and Bailey

The TV spectacular was due to be screened on March 19 at 9 p.m. on the CBC network. It was being sponsored by the Canadian Electrical Association. Canadians got a jump on their American cousins who weren't scheduled to see it until March 22. In Ontario, it was being carried on 14 English language stations.

Just about everybody's favorite acts were in the hour, from clowns to animals and from acrobats to aerialists. All were decked out in a brand new \$400,000 wardrobe.

On the rise

Ear Falls, the community that grew out of an Ontario Hydro colony of five families, is growing again. Located on Lac Seul in Northwestern Ontario, the site owes its present expansion to the development of the Griffith mine at nearby Bruce Lake.

In the last few months, 37 homes have been erected. Initial plans call for a total of 125. The Ear Falls generating station was originally commissioned in 1929. It underwent an extension in 1948.

A really big show

Salesmen are well advised to cancel any calls on electrical utility prospects slated for May 15 or 16 — they're likely to find most offices empty. Instead, they should plan on making contacts at the Barrie fairgrounds during one of North America's largest displays of electrical apparatus and construction equipment.

Sponsored by the Association of Municipal Electrical Utilities of Ontario, this unique show brings together more than \$2 million worth of the latest equipment, ranging from towering aerial buckets and post hole diggers to line hardware and safety devices. Utility representatives from across Ontario and many other parts of Canada and the United States are expected to attend.

Meeting with the association's planning committee in Toronto last month, almost 100 commercial representatives were briefed on the show's details. They heard H. E. Brownhill, chairman of the AMEU's Engineering Board, explain how the show was being expanded to include displays and demonstrations of overhead and underground equipment and techniques.

This is the first show of its kind sponsored by the AMEU in three years. Previous displays were held in Scarborough, Niagara Falls and Etobicoke.

Representing the commercial interests at the planning meeting. Kenneth Philip, of CGE, told his audience that the show offered suppliers an opportunity to educate utility people in rega techniques and equipment. "This is not a professional show emphasized, "we are partners with the utilities in this educa venture. We are provided with the space and an inter audience - beyond that, it's up to us."

Assisting with the show are the Barrie PUC and other uti Ontario Hydro and the Electrical Utilities Safety Associati Ontario.

The Barrie site was selected because it offers the best avaground for outdoor demonstrations such as trench digging setting and cable laying. It also includes an indoor display and refreshment facilities.

All a mistake



Seeing what makes him tick

Toronto Hydro's battle with city council over an incre power rates was the result of a misunderstanding, officials the utility's civic dinner last month.

"It's really all a misunderstanding," said commissioner Fre Gardiner, "Both the chairman and I thought the may" advised council about the increase. It is obvious from will mayor has said that he was under the impression we writing to council."

However, he added, from the technical point of view, T Hydro commissioners did not need to consult city council

respect to increasing their rates.

The Toronto utility had previously announced they postpone the increase after Controller Allan Lamport calle full investigation into its operation and finances. The proincrease will hike power costs by about 72 cents a mothe average homeowner.

Hydro Chairman John McMechan told the 80 civic and guests that the utility was the victim of its own success."



Smack on the lake

icized because we are successful," he said. "We have not had ate increase in the last 15 years."

foronto Mayor William Dennison, who by virtue of his office also on the commission, said they were prepared to give uncil all the information it required. "Hydro is an organization which we all have a great admiration and respect. And the onto utility is one of the best managed in the province."

After dinner at the Inn-On-The-Park, guests left by bus for the clear power station being built east of the city at Pickering. By saw a short film on nuclear power and heard a report on the gress of the project before touring the site.

deen running a geiger counter test on Toronto Hydro general mager Harry Hyde at the Pickering site is Mayor William maison. With them is Mr. McMechan and Toronto Hydro secrebruce Prentice. Bottom photo shows Mr. McMechan with P.A. K. Meen, Q.C., left, and the recently appointed Minister Mines, Allan F. Lawrence.

cool promotion

nsumers from the Atlantic to the Pacific will be hearing the cry bwn with defrosting" this spring. It's the slogan for an all-out motion of no-frost refrigerator-freezers. Back of the campaign year's preparatory work by the Canadian Electrical Association I the Canadian Electrical Manufacturers' Association.

The groups hope to increase sales of the appliances and locate dealers and the public to their advantages. In-store play kits will be distributed by the utilities. A contest among lers will also form part of the promotion.

nunicipal briefs

a competitive world, and Orangeville Hydro has decided to ploy a marketing salesman to improve its position. Aside from moting the use of electricity generally, the new man will pay cial attention to increasing the number of electric heating tems and water heaters.

nicipalities in the Ottawa area will come together next year. illar to the Metro Toronto regional government set-up, the tem will be two-tiered with representatives from 16 compities forming a central council. Boundaries and the political cture of the local municipalities will remain unchanged.

tham Hydro recently unveiled 1968 plans at its annual together with city council. Top priority is being given to street ting with old reflector-type lamps giving way to mercury-or. Lights will also be installed in several new subdivisions unserviced.

de 6 students took over the Meaford PUC meeting for their ung Canada" night last month. There was a power interruption ng the meeting. Manager Roy Bishop said later it appeared someone with an air rifle had been shooting at insulators.

new feature appearing in local weekly newspapers, East York ro Chairman Jack Christie mentions attending an OMEA ting on public relations. A ratepayers' meeting only a few its later confirmed to him the lack of awareness of the compion's role, he says.

nty-one employees of St. Thomas PUC last month received hat safety decals from PUC Chairman P. R. Locke. The rd scheme was introduced by the Electrical Utilities Safety ociation in 1963.

ia Hydro's secretary-treasurer Harry A. Luckins will retire month. Mr. Luckins, an active member of the AMEU, will inue to work in advisory and office capacities for a few years. las been with the commission 29 years, 25 of them in his and post. He will be succeeded by his assistant, R. A. Herter.

A railcar named One



On the right track

When Governor-General Roland Michener travels, his temporary residence is now two blue-and-grey railway cars. In use since last June, they were built by the Department of Transport and Canadian National Railways and are the first all-electric cars made in Canada. Power for heating, air conditioning and appliances is generated by a diesel motor.

Simply known as Car No. 1 and Car No. 2, the rolling residence is decorated in soft shades of olive green. One car contains the drawing room, dining room, kitchen, pantry and sleeping and eating areas for two stewards, a chef, a porter and a pantryman. The other car has bedrooms for the Governor-General and Mrs. Michener with adjoining bathrooms. Also included is accommodation for their personal staff.

Press Secretary Guy Robillard is shown examining the party's route on a map which pulls from the ceiling of the dining room. Meetings are sometimes convened here while private conversations are usually held in Mr. Michener's study, which opens on to the rear platform.

Pause for progress

London, Ontario, was the host city for 1968's National Electrical Week luncheon on February 13. The choice was fitting since it's estimated that one in 10 persons in the area labor force is affiliated with Canada's multi-billion-dollar electrical industry.

Activities in the city were staged by the Electric League of London and the Electrical Bureau of the Canadian Electrical Manufacturers' Association, co-ordinators of National Electrical Week events across



Canada. Included in the week's agenda were school poster contests, tours of manufacturing plants, speeches at local clubs, a 12-page newspaper supplement and a display of electrical appliances, old and new, at a shopping centre.

CEMA President Ralph M. Barford, president of General Steel Wares Ltd., was the main speaker at the luncheon. Head table guests included George Gathercole, chairman of Ontario Hydro, C. J. F. Ross, chairman of London PUC, Dr. J. M. Hambley, general manager of Ontario Hydro, and Hydro's Western Region manager Gordon McHenry.

Seen addressing the 300 guests, Mr. Barford illustrated the week's theme "Electricity Powers Progress", tracing man's rate of gaining knowledge down through the years. In the first half of this century, when electricity came on the scene, knowledge doubled, he said. And from 1950 to 1960 it doubled again.

"There will be more changes in the next 30 years than in all of

man's recorded history, with electricity playing a major role," he predicted.

Mr. Barford emphasized that in an inflationary atmosphere, products of the electrical industry have been dropping in cost. He said that the industry has spent more on research and development than any other segment of Canadian manufacturing.

"In terms of growth, electrical manufacturers have increased their output in the last five years at an average annual rate of nearly 12 per cent, and it has been estimated that by 1980 Canadian electrical manufacturers will be shipping goods annually valued at \$6 billion — or about three times our present production levels." he said.

Dreamland



On-the-job snooze

The recent ice storm which created havoc across Southern Ontario had its quiet moments. Typical of these was this scene at the Dohme Avenue service building of East York Hydro.

Roll-away beds were set up so that outside crews could snatch 40 winks between battles with tangled wires, fallen tree limbs and mounds of ice and snow. It was one of the few times sleeping on the job was encouraged by management.

Smokeless carriage

United States federal officials have announced the development of a gasoline-electric mini-car that could cut vehicle air pollution by 90 per cent. A co-operative effort by the University of Pennsylvania and General Motors, the car would be half the length but the same width as the average North American car and cost about \$1,600.

The car could be built with existing technology and be in wide use in five years. With a three-man capacity, it would have a top speed of 60 mph and a range of 100 miles. Its battery would be charged by a small gasoline engine during use. Officials say it could run short distances on the battery-electric system alone to eliminate fumes in such places as tunnels or indoor parking areas.

Ecole électrique

The Quebec government will adopt an all-electric concept for future school buildings in the province, says Paul E. Allard, Natural Resources minister. He forecast the policy will open up a new \$10 million-a-year market for Canada's electrical industry.

Mr. Allard said that the use of electricity in the province is increasing by 7.5 per cent a year compared with a world-wide growth rate of 3 to 4 per cent. This will push Quebec's annual consumption to 152 billion kilowatt-hours by 1985. The current level of 35 billion kilowatt-hours compares with Ontario's 45 billion.

Fast breeder

Last year was a bumper one for nuclear power in the UStates. Electrical utilities made known plans for 32 atom-poplants during the year. At present, the Americans have 16 n stations in operation, 21 under construction and another 52 planning stage. Lumped together they represent a capacity power stations in Canada.

Not quite ordinary

Although at first glance it looks like a normal everyday of typewriter, a new model from IBM is far from it. While it standard typewriter keyboard, the machine will produce in Braille.

The typewriter, recently unveiled in Canada and arour world, sells for the same price as a regular electric (about and is the brainchild of Kentuckian Marsden Emig. Mr worked on the machine at home for five years. Both IBM a CNIB look on the invention as a communications bridge be sighted and blind persons. It takes a very short training pe become familiar with the machine.

Front row, centre

Booking a seat for a Broadway show from London, Er used to be a long, complicated procedure. Now it can be a matter of five seconds thanks to a computer.

The system, which went into operation in New York re works like this: the booking clerk presses buttons on a writer-sized machine which automatically relays the mess New York via satellite. The computer then returns details are printed on a ticket by the same machine.

The electronic ticket agent can handle 400,000 instructions second. It's expected that the system will be extended acrumited States as well as the Atlantic.

Rushing waters

Niagara Falls has been caught on film millions of time there's never been a successful capture on tape. Sound ings are next to impossible because of the width of the right the difficulty of locating microphones properly.

A new Ontario Hydro film entitled "Niagara Powe confronted with this problem in shooting. It was solved men's washroom. The thunderous sound of tumbling was achieved by recording running tap water and re-recording much slower speed.

The 20-minute color film, which deals with the bear importance of the river, is available from Hydro's Fig. Graphic Services department.

January energy production

Primary energy provided by Ontario Hydro in Janu / totalled 5.14 billion kilowatt-hours, an increase of 1 per cent over the same month a year ago. Adjusted reasonal influences, primary energy demand in Janu / was 4.61 billion kilowatt-hours, 4.5 per cent more that the previous month. The seasonally adjusted total January represents 55.51 billion kilowatt-hours annual rates. This is 397.98 per cent of the energy demand in 1949.



ost of us went along with Mark Twain when he sured us we could look forward with absolute ertainty to death and taxes. But the way things ok now, he may have been only half right. exes, oh my yes, but death could be going out fashion.

Transplants are what we have in mind and in elight of recent developments it's not hard to existe the time when anyone with a faulty gan will simply drop in at the nearest spare arts depot for a replacement. Organs will be sted in catalogues chained to the service counter and these will also give retail prices and installation charges. Specialists in particular organs will adoubtedly evolve — after the manner of Speedy uffler King — and defective parts will be reaced under a guarantee of 24 months or 24,000 iles, whichever occurs first.

Kenny the Kidney King and Tommy the Tummy ader are certain to do a roaring business.

Recent statements from a variety of impressive purces confirm the danger. For example, in buth Africa, which has taken an early lead in the terchangeable parts race, they're already talking about grafting hearts from pigs and apes into por old homo sapiens.

Nor is there much comfort to be found in a puth African doctor's offhand assurance that epig is very closely related to man, anatomically eaking. He goes on to imply that if porkers old be bred about the same size as humans, the ference then would hardly be worth menning.

The good doctor envisions herds of animals ing reared specifically for the spare parts busiss so that hearts, livers, kidneys and other rly important components could be wareused, so to speak, on the hoof.

More medical monkeyshines are taking place Washington where doctor-scientists are busily ministering electric shocks to pig-tailed mons in the hope of discovering the influence of brain on heart disease. Not directly associated high the parts industry, the very existence of the tailed monkey may open up new vistas of pply. If the best parts of the pig can be raised sek by jowl with A-1 monkey spares, the prob-

and don't think the boys are just fooling around. Fr in Russia, a doctor has succeeded in transorting an entire head from one dog to another. Consider the potential here — bin upon bin of human heads ready for attachment to well-heeled shoppers who may have grown tired of the homely protuberance they managed to grow over the years at the top of their necks.

Last word in the macabre remains with the Russians. They suggest stock-piling used parts with the original owners. Under this little scheme, human bodies, with the brain destroyed but the other organs healthy, would be kept alive to supply the needs of eager surgeons.

Great — the only danger here, as we see it, is the possibility of escape. Should a group of these lads break out and find their way into politics, for example, the consequences would be serious. Their inevitable success could result in demand outstripping supply so that the surgeons would be back where they started with the monkeys and the poor puppy-dogs.

Switching to another intriguing area of medical progress, we find an American doctor prescribing alcohol for pregnant women to prevent premature birth. The technique enabled one patient to delay giving birth for 13 weeks until the baby was sufficiently developed to survive that awful shock all newcomers must endure upon gazing for the first time on the environment they will be required to put up with for the rest of their lives. And she enjoyed every tipsy minute.

First, she underwent a nine-day toot in the hospital during which she was fed alcohol intravenously. She was then sent home with strict orders to indulge to her heart's content in the highballs of her choice.

This is the kind of approach by the profession we can all applaud. In addition to being absolutely painless, except for the morning after, it provides us with another good excuse for retaining a small bottle of schnapps about the person at all times. Snake bite remedy is hard to explain away in the cold months of winter but a precaution against premature birth should be socially acceptable at all times. It could happen to any of us.

■All nonsense aside, it's hats off to the men of medicine whose fantastic achievements of recent years stagger the imagination. (Excuse us for just a moment while we down another aspirin. There's just no curing these danged winter colds.)

Elsewhere on the labor scene, in South Vietnam to be precise, we might mention a novel approach to labor relations which seems to be relatively effective in limiting the duration of strikes. There, some 4,500 electrical workers of the government-owned Saigon Power Company were persuaded to resume work after a short, two-day work stoppage during which 40 per cent of the city was blacked out.

How were the brethren cajoled into picking up their tools? Pickets were first dispersed at gunpoint by flying squads of combat police and an edict issued offering jail terms as the alternative to going back to work. Malingerers were picked up at their homes by the police and marched to the job at the point of a bayonet.

Contrast this with the mollycoddling going on in England where eight men and four unions were required to replace a whatsit. As we heard it, this doodad fell off a telephone switchboard and two electricians were dispatched to replace it. In the process, they tore the linoleum so that two tile workers were hastened to the scene. Upon lifting the floor covering, damage was revealed necessi-

tating the administrations of a pair of carpenters. Normalcy was not restored until two members of the painters' local had got in their licks.

Eabor and the social state are often blamed, unfairly we hasten to add, for the rather sad state of economic affairs currently prevailing in Merry Old England. But a recent press dispatch suggests very definitely that the Englishman has lost none of his desire or capacity for good old-fashioned hard work. According to this item, four men were clocked loading 30 tons of steel on four trucks in two hours. Or was good old-fashioned capitalistic incentive behind their endeavors? In any event, the company owning the steel offered a \$240 reward for the apprehension of the four blighters. Applauded for their efforts and offered tea by one housewife on the scene, the steel loaders were actually thieves.

■Substantiating our long-held belief that cats, for the most part, are an ungrateful lot, is a report from Dunnville of an 18-minute blackout. It was caused by a real cool cat creeping into a warm substation for 40-winks on some live apparatus — a procedure which used up all of its nine lives in the flash of a busbar and consigned much of the town to temporary darkness.

It seems like a dirty trick to play on a utility manager who also happens to be the inventor of the renowned Dawson pussycat snatcher for the humane and safe removal of poled cats from power poles.

But four-legged interference is obviously not confined to this side of the world as our picture of a koala bear being rescued by a "faultsman" of the Electricity Commission of Victoria indicates pretty clearly. At the same time, the teddy-bear bagger from down under looks like a pretty primitive piece of equipment compared with the snazzy plexi-glass cat-catcher perfected by our own Mr. Dawson and featured in this column a few months ago.



m''Tell the People'' is the slogan adopted by the municipal Hydros for their new PR program aimed at promoting better community relations and at least one commissioner is putting the theory into practice. He's Jack Christie, of East York, who's been telling the Hydro story through a series of admirable articles in the community newspaper. He usually ends his column with a recipe or a timely tip on the care and maintenance of electrical appliances.

One particularly effective effort stressed the co-operation existing between council, Hydro and the board of education. It was followed by a recipe for barbecued baloney.





greatest grow-inblackfly at baysweet sound of success

ontario hydro news

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the cover

A rose is a rose is a . . . well, not exactly. A different variety is placed twice a week in the president's office at Calvert-Dale Estates, the Brampton flower growers. Apart from other flowers, Cal-Dale produces six million roses a year. It also coaxes chrysanthemums to bloom year-round with the aid of electric light. There's more about this gigantic grow-in starting on page nine.

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Going fishing? In a way, yes. True, it's not every day you come ac) an angler clad in an impeccable white suit. And this one's gear set to have become incredibly tangled. Actually, the gentleman conce is "fishing" for blackflies, companions that every experienced a knows only too well. His "tackle" consists of strings of sisal depc in the fast-flowing Chalk River, a tributary of the Ottawa, and b covered with blackfly larvae. The larvae will be immersed in a r. active solution then returned to the river to hatch out. The adult will retain the radioactive material, making it easy for scientists to track of their migratory habits. Atomic Energy of Canada Ltd Queen's University are conducting the experiments. For further day on this and other research into the blackfly's secrets, please to page 12.



Radio captures the tuned in set

by Norman Panzica

For a time they wondered, "Is anybody listening out there?"

In the early and mid-1950s, many a seasoned broadcaster sitting in the sterile hush of a radio studio with only his own voice to break the silence would wonder. Prophets of doom were digging a grave for a marvel of communication that had helped tie together our strung-out population.

Along that narrow strip of Canadian population hugging the border between us and the US, the unblinking — if often erratic — eye of television pulled us into

the living room. It sent a death-ray to the tall radio standing in the corner and made it a dust-catcher forever. Or so it seemed.

Radio was dead; long live television!

Once a very lively and profitable industry, radio surely looked dead. Gone was the time when supper was eaten early so the noise of the dishes wouldn't interfere with Amos 'n' Andy. Gone was Lux Radio Theatre and Frank Sinatra urging us to



keep a lighted Lucky burning in the window.

Radio had helped unite us; had kept us informed during the war and inspired victory efforts; brought us drama and music. In half a century, it had come from theory to dominate our lives. Was its colorful story ending now?

It had hesitantly entered our lives in 1901 when Marconi joyfully received the first radio signal to be heard in Canada, from England. By 1918, XWA had broadcast the human voice and was licensed in 1920 as CFCF Montreal, still in vigorous operation today.

A couple of decades after Marconi's December milestone, Sir Henry Thornton had an idea. He was boss of the debtridden Canadian National Railways and, in his urge to beef up this slender thread, put forth a radical proposal. He would bring radio to the railway in order to pull in the people.

It was 1923, and by Christmas of that year he'd connected Montreal and Ottawa for Canada's first "network" broadcast. In the better railway cars a radio graced one end, its little green eye commanding respect and attention. A dignified radio attendant in full uniform manipulated the dials. By 1929, the network was truly coast-to-coast and the CN hired the Toronto Symphony Orchestra for Sundays.

But 1929 was, after all, 1929. Disposing of the radio receivers in the 80 CN cars was no problem (little is known about the fate of the attendants). But the

question was "what do you do with string of radio stations?"

The answer, in Canada, could only to "let the government take them." Bar 1923, the broadcast business had be shoved from the Ministry of Defence the Department of Marine and Fisher In 1932, the Canadian Radio Broad casting Commission was formed and CBC followed in 1936. Radio booms throughout the war years. Then TV exploded on the scene.

Within the broadcast industry itself, few radio people panicked. Some lose on it as a period of transition; some a challenge. But not one Canadian rad station went broke. If you lived in Sc Ontario, TV came in 1949, penetrating relentlessly across the border from E



Ultra-modern studios, airborne traffic reports and the snatching of somebody's favorite disc jockey all contribute to the image of contemporary radio.



'as," says Larry Solway, a vicedent of Toronto's CHUM and host leading "open-line" show, "a case lapt or die. And radio didn't die. We to, as we do now, divine what areas led to be served."

sn't so much replacement as disment — TV occupied and pre-occuthe people. And it wasn't just radio uffered — live theatre, movies, all ational attractions got hurt. And TV deserts out of record stores.

nany others in the business, Mr.
ay isn't sure whether radio has
a comeback, or whether it was simply
away. CFRB's Bill McVean believes
the first few years after TV was
a period of transition.

went looking," says Jack Dawson,

vice-president of CFRB. "The transition was gradual — first the morning programs were beefed up, then the soap operas went. Many of the features of old radio were retained but in a new, abbreviated form. There was a time when we didn't even measure listeners to the early morning hours. Today it's crucial — a strong morning personality is absolutely vital."

In many ways, the 7 to 9 a.m. period, its success and its significance for the station, reflects the new radio. It gives what you want to know, when and where you are: time, news, weather, traffic reports and music.

"TV kicked radio out of the living room," says Dick Lewis, publisher of Canadian Broadcaster and a man credited with having

launched the careers of dozens of radio personalities. "But it sent radio into every other room and area you could imagine: into the kitchen, the patio, the car, the laundry room, the bedroom. You didn't listen by appointment any more."

"Radio," says Larry Heywood, of the Radio Sales Bureau, "is where the action is. Radio found the weaknesses of TV and found the jobs it could do better."

Mr. Heywood, an industry spokesman who can deliver statistics faster than a sports announcer giving scores, points out that Canadians spent more than \$7.13 million last year just for batteries to put in their radios. Half of all the dry-cell batteries in this country go into personal radios.

How vigorous is the new radio? Canadians buy between two and two-and-a-half million radios a year. By 1971, we'll have more radios than people. Right now, there are about 17 million in use in Canada, two-thirds of them other than plug-in.

"People tell me about radio," says Mr. Heywood. "They remind me of the great listener loyalty that used to be given to particular programs. That kind of loyalty doesn't exist any more because that kind of radio has gone."

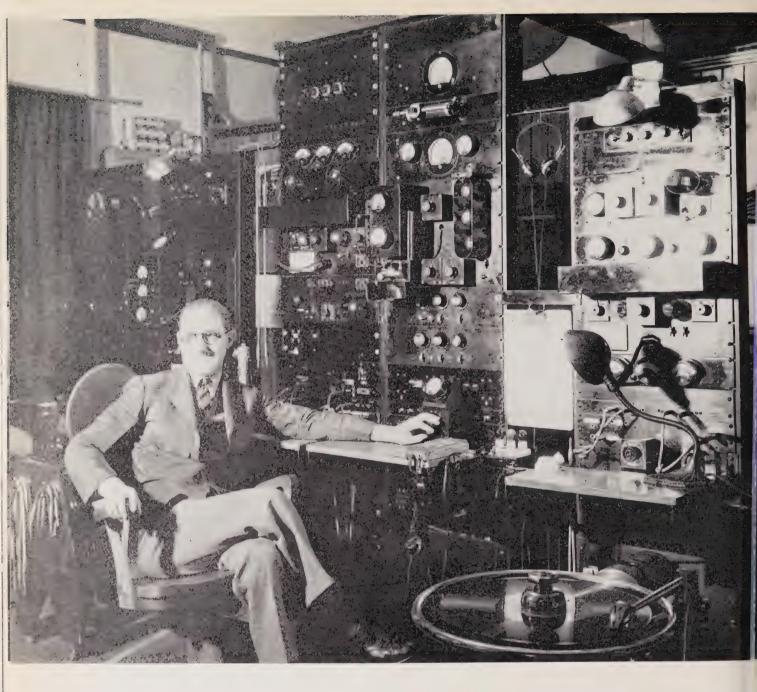
The revitalized radio features immediacy, flexibility and short items.

"If we could sell a car in 60 seconds," says Larry Solway, "we could tell the marijuana story in a series of short pieces, and we did." His station, consistently running a close second to CFRB in the lush Toronto market, was the first to win awards from educators, partly for a series of short, swinging items telling the young to "stay in school".

CKEY, Toronto, was the first to go to regular hourly newscasts, and keep them brief. Block programming — two or three hours of one kind of music — came in. Gone were the 15-minute and half-hour shows to be replaced by three and four-hour segments. (Block, incidentally, is named for Martin Block, an American at the New York station where these large blocks of programming were first used).

CFRB, now in its 41st year, offers its religious programming as an example of what happened in radio. No more do stations broadcast entire church services to remind the Sunday loafer of his guilt. Local clergymen are on for several two-minute periods each Sunday in "Moments of Meditation."

Advertising revenue, a good barometer, proves how radio's doing. It ranks third — after newspapers and TV — in such



revenue, hitting \$86 million last year with 10.2 per cent of all money spent. Its gains, however, have not been at the expense of TV. Although TV's share is settling down (11 to 13 per cent), the declines show up in weekend supplements and general-interest magazines.

FM radio, that static-free medium, is growing fast and there are people who say that within 10 years it will be the dominant kind of radio. Its development was slowed by the war and by TV.

Superior tone quality and the ability to broadcast in stereophonic sound have given FM a general image of high-brow tastes, but among the 70 FM stations in Canada, this seems to be changing.

The change, if it's coming, is slow.

CHUM-FM's Mozart-Chopin formula is as different from CHUM swinging AM as it could be. CHFI Toronto, which had a 24-hour FM station while its AM outlet was sunrise-to-sunset, has a pair of fraternal, though not identical, twins. Their appeal is frankly to the "fur coatand-Cadillac" set.

The Radio Sales Bureau says that sales of FM sets are rising fast. AM radio once had the advantage of distance, but with technological change and growing prosperity, smaller and smaller centres can have their own stations and the distance covered by a station is less relevant.

But the "high class" image is still with us. A recent survey showed that the biggest advertisers on Canadian FM are airlines. travel bureaus and higher-priced cal-Food stores, a leader on AM, ranked And 12 per cent of Canadian FM st refuse to carry any commercial jingle

A present-day urban station like CKI CRFB or CHUM operates at anythin 50,000 watts — the power radiated the transmitter. As a rule of thumb, t requirement is about three times the rated power. Major stations in Toror used between 95,000 and 110,000 watt-hours during February, for example to the requirement is about three times the rated power. Major stations in Toror used between 95,000 and 110,000 watt-hours during February, for example to the requirement is a solution of the requirement of the requirement is a solution of the requirement of the requirement is a solution of the requirement of the requirement is a solution of the requirement of the requirement of the requirement of the requirement is a solution of the requirement of the require

As transistors have made an impact radio receivers, the transmitting encisteadily moving toward a tubeless of the CFRB's new facilities are almost enabled solid-state. And no longer is there of big master control room. Instead, the









Radio as it appeared before TV kicked it out of the living room. Far left is CFRB in the thirties. On this page, CN passengers listen in, and photos from the CBC Broadcasting Museum showing Jack Dempsey in Canada's first radio studio in Montreal, roving reporter Frank Willis and the Happy Gang.

pment incorporates relay switches oftely controlled from consoles in studio.

aps the more striking study in consist the millions of dollars' worth of pment and high power used to transdulcet sound at one end, and the wking of a two-dollar pocket radio to ther.

seeing youngsters umbilically hed to transistors, the housewife is 's best urban customer at about 30 a week. All other groups average 20. Only the farmer listens more—t 40 hours a week.

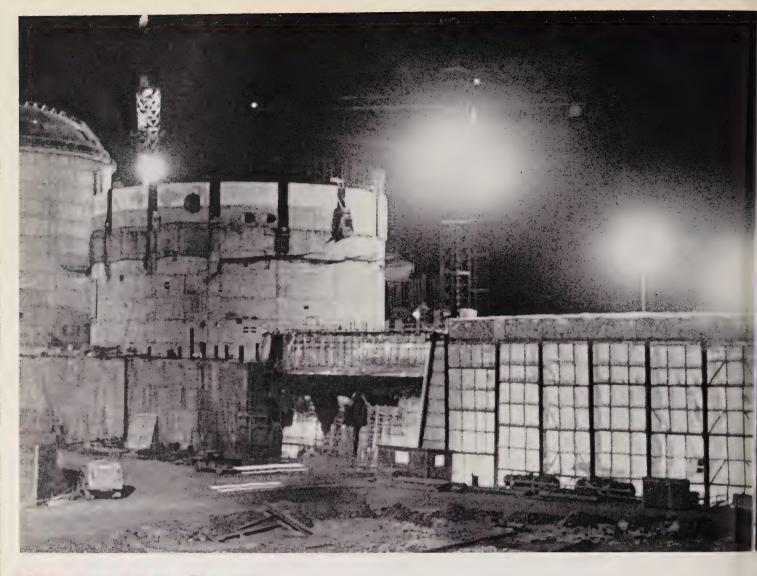
there is still a place for longer docularies. The CBC, which pioneered I significant advances in publicaffairs programming, still turns in internationally-acclaimed half-hour and hourlong documentaries. Evening-school students, the blind, and people who want more adult fare than TV can offer, would undoubtedly cry out in horror if it ever stopped.

Morning loyalty is a factor, too, ever since that St. Valentine's Day in 1949 when Max Ferguson brought to the network "Rawhide," that incorrigible who drew fire in the House of Commons his first day on the network. That "low, aged, hard, flat, sloppily sibilant voice," as Ferguson himself calls it, can't seem to lose its listeners.

Apart from fat promotion budgets, helicopters and all-day personalities, radio stations today have images. And there's a large body of opinion which says that's the big difference. Before TV, people listened to radio programs — the Happy Gang, Ma Perkins, The Shadow or Don Messer. No station needed an image. Now people listen to stations that suit their needs. TV today is very much in the position radio was then: people know programs, not stations.

Quickly, now: on which station is "Mission Impossible"?

And which TV station can tell you where there's a traffic bottleneck?



it's in the bag

by Hal O'Neil

Bathed in glaring light and teased by the wind, two men slowly guide a craneheld hopper of concrete into pouring position. Just as one is about to trip the release and send the grey ooze cascading into plastic-packaged forms, the wind buffets the hopper aside. After a few moments, the breeze relents and the pour can be made.

The same operation's been underway for 14 hours, only now it's dark. And while the bustle of the night shift at Pickering nuclear power station may seem strange to the casual visitor, to the workmen "it's the best shift going."

Work on the site — just east of Toronto is continuing around the clock these days to meet the scheduled 1970 in-service date for the first of the station's four atompowered units. The others will come on line in succeeding years.

Pickering is one of the world's largest nuclear power stations under construction. With all four units in operation, its capacity will be 2,160,000 kilowatts enough for the power demands of 1,400,000 households.

One of the miracles of the postwar era, giant sheets of transparent plastic are proving their worth around the site. Cocoons have been woven over the service building and water intake channel areas. This not only permits the placing of concrete when the temperature falls to the zero mark, but also makes for better worker comfort. Heaters raise the inside temperature to a relatively balmy 40 degrees.

The plastic is supported by a wooden framework and gives the impression of a giant greenhouse, particularly at night when the inside is floodlit. To visitors, it

may at times seem as if they're still out side as flakes of "snow" float down fro the ceiling. Actually, the flakes are fros formed on the inside of the plastic as moisture condenses. When the wind buffets the covering, the frost falls awa

While the "greenhouses" have cost about \$400,000, they are paying for themselv in recovering lost time. Concrete pouri scheduled for last summer but delayed because of the construction strike, is n v being completed indoors. Without the plastic, it would have had to wait until this summer and set back the project & full year. With both the day and evenir shifts, concrete is being poured 16 hou out of the 24.

At present, there are nearly 1,300 peor on the job. Three hundred of these wc the 4 p.m. to midnight shift. Another 6 work the "graveyard" shift through the small hours. The day shift figure incluci sizeable office staff needed to combat



Concrete pouring continues into the night at the \$528 million Pickering project. Three hundred men work the 4 p.m. to midnight shift

atever the weather or e time, night shifts and astic cocoons help put nada's largest nuclear oject back on schedule

nountain of paper work that accomes a job this size.

e's a movement of men between s, so that no one has to work steady ts or days. But many prefer the t shift,

ne carpenter put it: "I get home t 1 a.m. in time for a good night's b. When I get up, I've got the whole or doing things."

reting is the backbone of the job now. And although the amount being ed pales in the light of that needed hydraulic station of similar size, it is essive. In all, 370,000 cubic yards of rete will be used in the four units gh to build a wall 16 feet high and et thick between the site and pto's new city hall, 20 miles away.

the walls of the reactor buildings four nick and towering 120 feet high, it flerstandable that much concrete ded.

Inters are busy in the No. 1 reactor Ing contructing forms for internal Ires. Like flies in a spider's web of



photos by Ron Brown



The dinner horn sounds at 8.30 p.m. Conversation bounces back and forth in a dozen tongues as tea is poured and lunch pails are opened.

steel scaffolding, other workers are finishing the upper half of the concrete vault where the reactor will rest. In the second unit, internal concreting is going ahead.

The tallest structure in the complex will be the vacuum building, a safety device for the reactors that is situated closest to the lake. Its massive base slab has been poured and rod-reinforced columns are poking up into the sky. It's a bone-chilling experience working here for it gets the full sweep of the wind off the water.

Back on the night shift, the dinner horn sounds at 8.30 p.m. Workers make a dash for the lunch hall and nearby catering truck. Healthy appetites are evident as they augment lunch pails full of sandwiches and a thermos of tea or coffee with donuts and tarts from the truck. For some, there's time for a card game. Conversation bounces back and forth in a variety of accents and a dozen different languages.

The job of painting the inside of the first reactor building is reserved for the "grave-yard" shift. Scheduling the work for the relatively quiet hours eliminates the problem of fumes affecting other workers. The paint is a special one, designed to reduce the penetration of radiation into the concrete.

Machine and fabrication shops are working on a two-shift basis. Steel in all shapes and sizes is welded, cut or threaded in the machine shop for installation on the job. The fabrication crews have just finished work on cooling tubes that resemble a spaghetti jigsaw puzzle. These will be embedded in the heavy concrete of the reactor vault. Another mass of tubes will carry 1,500,000 gallons of cooling water through the station each minute of full operation.

Already in excess of \$200 million has been expended on the project. It's estimated that when all the construction dust has settled, the figure will be \$528 million.

The costs of the first two units is being split among Ontario Hydro, the Ontario government and the Canadian government, with Hydro bearing the lion's share. The two governments will be later repaid. Units three and four are being financed wholly by Hydro.

The outlook is bright for actual costs of producing electrical energy from the atom at Pickering. Estimates indicate it will be about four mills a kilowatt-hour, which is in line with that of a coal-fired station of similar size.

ing is a year-round happening for the ver people of Brampton. And in stag-Canada's biggest grow-in, they're ving that the electric light bulb is as I to the flower-raising business as its ticultural namesake.

flower people of Brampton, 25 miles thwest of Toronto, are the 366 emyees of Calvert-Dale Estates Ltd., one of nation's largest flower growers. Annual duction exceeds six million roses, e million carnations, one and a half on commercial chrysanthemums and million bunches of spray mums. Not nention a lot of other varieties includorchids, gardenias and lilies.

n its 42 cultivated acres, all of them er glass, Cal-Dale supplies 1,300 ver retailers throughout Ontario and bec, and in Maritime and Prairie res. The company operates a fleet of vehicles, ranging in size from 45-footers to urban delivery vans, and mains warehouses in Toronto and Mont-Flowers are also shipped from appropriate to by rail and air.

anced growing techniques enable Dale to operate on a steady basis ughout the year.

ak demands for flowers are on her's Day, at Christmas, on Valens Day and at Easter," says Cal-Dale utive George Stephens.

ther special event the company rs for is St. Patrick's Day. Thousands namrocks are grown from seeds n in from Ireland.

vell as skilled horticulturists, Calemploys a variety of professions stationary engineers to data proces. And a key role is played by electricity, as a growing aid and in grading, ing and shipping.

art from water and food, three essenfor successful plant growing are light, and carbon dioxide," Mr. Stephens ains. "To meet year-round demand for santhemums, which normally bloom e fall, the plants are 'forced' to flower ghout the year with the aid of rows lector lamps suspended in the greenes.

wth is regulated by various cycles in the plants are shaded with black alins for perpetual night and the dayhours are extended by electric light."

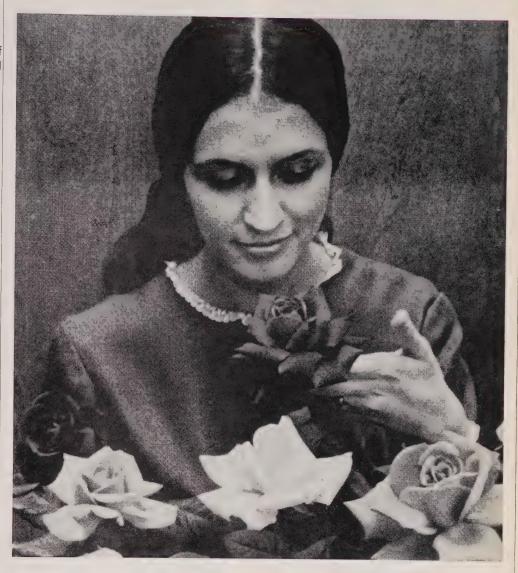
ng is provided by more than 200 miles am pipe throughout the property.

I is also used for soil sterilization.

on dioxide, which improves producnd crop quality, and makes maxiuse of the low natural light intensity ter, is introduced into the green-

Flower Power

by Paul Chisholm



how electricity aids canada's biggest grow-in

houses from outside generators which burn propane gas," says Mr. Stephens. "The carbon dioxide is distributed by electric fans through a system of thin polyethylene ducts."

Electricity's other functions include powering a circular conveyor belt on

which roses are graded on a production line basis, the heat-sealing of cellophane wrapping on boxes for individual orchids and other fragile blooms, operating stitching machinery and semi-automatic wiring machines for assembling cartons and lids, providing cooling and manufacturing the ice used in packing roses for shipment.

Customer accounts are handled by data processing equipment, which also supplies sales summaries of each product. The system provides accurate information for crop planning, sales forecasting and inventory control.

The company's salesmen are constantly in touch with customers on the company's long-distance telephone system. Cal-Dale also operates a florists' supply department,



photos by Gary Smith

which provides vases, ribbons, cards, wire, foil, novelties and other items.

Cal-Dale's origin dates back almost a century. In 1870, Harry Dale began selling roses grown in a small greenhouse at his Brampton home. His first shipments were packed in shoe boxes. Walter E. Calvert, who worked for Mr. Dale for several years, established his own flower business in 1911.

As the two market gardeners operated their peddler wagons around the town and in the expanding Toronto area, they no doubt reflected on the success and steady growth they both enjoyed. There is no record as to whether their thoughts turned to the possibility of a merger — something which was to take place in 1965.

The company operated as two distinct divisions, plus subsidiaries, until full consolidation last July. Publicly owned, it has the distinction of being the only flower company listed on the Toronto Stock Exchange.

And with sales exceeding \$6 million annually, the flower business is obviously blooming.

Flower knowhow, cold storage and artificial sunlight all contribute toward Cal-Dale's \$6 million turnover. Centre photo shows production manager Harry Dale and credit manager Jim Algie, descendants of one of the company's founders.















Brampton first to light the way

Flower growing is one of more than 70 industries in Brampton, which in 20 years has grown from a sedate rural community to a thriving manufacturing centre of 35,000 persons. The Peel County town's industries turn out products ranging from automobiles and shoes, to paper cups and street lighting luminaires.

"Among Brampton's claims to fame is the fact that it was the first town in North America to have illuminated street signs," says Vern Breen, manager of Brampton Hydro. "The signs were introduced in 1962, providing important safety factors as well as aesthetic and functional features."

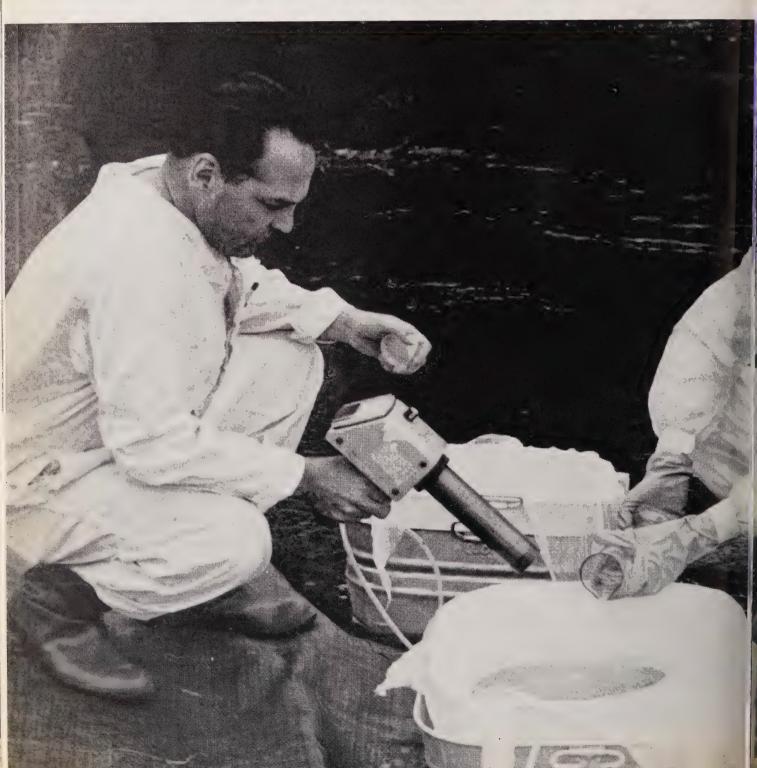
Electric power was introduced to Brampton in 1885 from a small generating system on the Credit River at Huttonville, four miles west. The plant was built by a Brampton industrialist to power his woollen mill.

Within a year, the new form of energy sparked off a controversy that sharply divided local citizens. A newspaper stated that "electricity has had its day". But Bramptonians were won over after a "spectacular demonstration" of the electric lamp outside a Main Street hotel. Six street lights were promptly installed in the town.

To meet growing power demands, the Huttonville generating station was expanded early in the century. In 1912, the town voted to join the province's hydro system.

Brampton Hydro customers have increased from 2,000 at the end of World War II to more than 10,000 today. A downtown underground wiring program is more than half completed and for six years all new residential areas have been serviced underground.





SINGTHE SKEDOSON



helicopters, carbon dioxide and even the loon are being brought into the fight

Six years ago, a Quebec ornithologist was experimenting with a dead loon when he made a discovery that may have farreaching consequences in the fight to control one of the worst scourges of the Canadian bush.

The scientist, Dr. James Lowther, of Bishops University, Lennoxville, collected literally hundreds of blackflies from the bird. Once the loon was skinned, the skin continued to attract the flies in droves. They even hovered around a rock over which washings from the skin were poured.

A substance secreted in the bird's uropygial or preening gland turned out to be the source of the attraction. It supported suspicions that blackflies are drawn to their prey partly by their sense of smell.

The loon extract is nectar to only one of the 30 or 40 types of blackfly found in Canada — the species that feeds on the loon. But scientists are optimistic that they are at last cracking the secrets of one of the smallest yet most ferocious inhabitants of the insect world.

Blackflies or buffalo gnats, as they are sometimes called, are found in practically every part of the world where there are fast-

Chalk River scientist checks radiation as phosphorus-32 is added to tubs in which blackfly larvae will be immersed. Radioactivity enables researchers to trace hatched flies. Top: larvae cling to sisal strings left in the river.

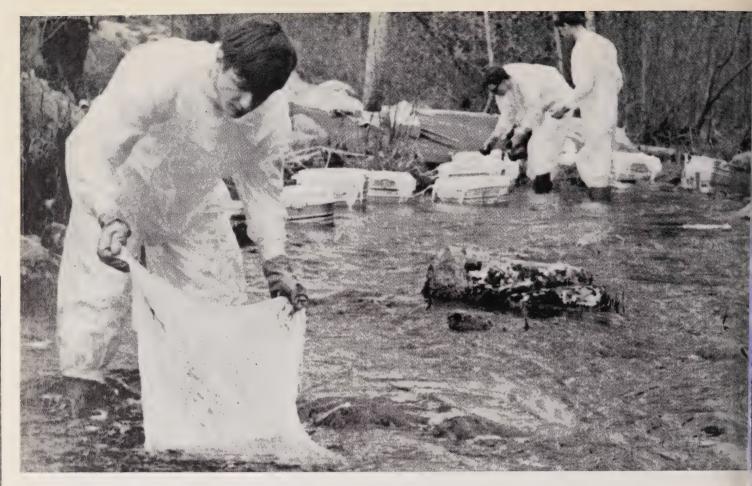
running streams. Specimens have been found preserved in amber at least 30 million years old. The female lays her eggs on stones or vegetation in the water and the larvae remain there until they emerge from the cocoon as flies.

Anyone who has spent any time in the Canadian north knows that they occur in enormous numbers in late spring and early summer. Although extremely small, ranging from one to five millimetres in length, their toxic bites and the resultant loss of blood have been known to kill domestic animals and even human beings. Gabriel Sagard, a Recollet Brother, wrote during a trip up the Ottawa valley in the 1600s: "If I had not kept my face wrapped in a loosely woven cloth, I am almost sure that they would have blinded me, so pestiferous and poisonous are the bites of these little demons." Blackflies also carry a variety of diseases, including one which in Mexico, Central America and Africa causes blindness.

Only the female feeds on blood, which she needs before she lays her eggs. On humans, the flies crawl into the sleeves, under the collar, around the tops of boots and other vulnerable places. They especially favor the head just beneath the rim of a hat.

Insect control is a science fraught with difficulties. The number of individual insects alive at one time is thought to be about a billion billion. Of these, about 99.9 per cent are harmless to man. A few are actually indispensable. Take the role that bees play in pollination, for example. The troublemakers — agricultural pests and the vectors of human and animal diseases — run to about 3,000 species.

Basically, there are three main methods of control. The population of a particular species may be reduced biologically, either by introducing parasites and predators or more recently by irradiating large numbers of males to render them sterile. Repellants and pesticides form a second



group while the use of attractants and food lures composes the third.

A tremendous upsurge in the use of attractants has been experienced over the last 15 years. One highly successful experiment was the use of a sex attractant to help entomologists assess the gypsy moth population in the forests of Pennsylvania. Sex attractants are obtained from the virgin female fresh from the cocoon. One theory is that communication between male and female is completely disrupted when an area is saturated with the compound. Researchers have met with no success, however, in diverting the sex instinct of the blackfly.

Vision may play an important role in the blackfly's mating habits. The males of some species have been observed swarming over certain markers while the females flew in among them. Certainly they can distinguish between colors and experiments have shown that dark blue cloth draws more flies than white

Another curious feature is the blackfly's affinity for carbon dioxide gas. Scientists recently ran a series of tests at the Department of Lands and Forests wildlife research station in Algonquin Park in which they released carbon dioxide near a number of mannequins and flesh-colored cylinders.

The researchers, who included Dr. A. M. Fallis, head of the University of Toronto's department of Parasitology, found that, combined with vision, sensitivity to carbon dioxide is a major factor in attracting female flies.

To determine the attracting qualities of human breath, one of the researchers exhaled through a 25-foot length of plastic hose with a trap at the opposite end. The device caught over 300 flies in 10 minutes. In practice, attractants would be used to lure the flies to a central location where they could easily be destroyed with a pesticide.

Work on combatting the blackfly is progressing on several fronts. Chemists at the Ontario Research Foundation laboratories at Sheridan Park, near Toronto, recently did work on separating components of the loon's preening gland extract.

"It's composed of literally dozens of compounds," said one of the researchers there. "You've got to get rid of the junk before you can start trying to isolate and identify the pure chemical."

Ontario Hydro is at present working with the Ontario Water Resources Commission in trials of pesticides which may be used as an alternative to DDT. Dichlorodiphenyltrichloroethane, or DDT, was discovered some 25 years ago and proved a far more effective weapon than what might be termed the first-generation pesticides such as kerosene and arsen of lead.

Until two years ago, Hydro used it will to control the blackfly population arou construction and operations projects i Northern Ontario. The method employ was to install drip tanks over major streams within a three-to-five-mile ratiof the work site and feed in measured amounts of DDT.

This killed off the blackfly larvae and, the concentrations used, was apparen harmless to other wildlife. However, DDT is not easily metabolized and the is evidence that it has been assimilater other wildlife forms in which it can be up to dangerous and even lethal propritions in the body fat. Biologists also fe that certain species of blackfly may be developing an immunity toward the compound.

Hydro chemists have now narrowed search for a suitable alternative to DD pesticide with similar characteristics be which is more rapidly metabolized, are also to a group of organo-phosphorus compounds. The effectiveness of these chemicals against blackfly larvae is keep and this summer research teams will concentrate on the side-effects again other water organisms.





organo-phosphorus compounds the nervous system causing the to lose their hold on stones and ation in the stream," says Dr. Ray who is heading the research. The the larvae are washed away, their ce of survival is slim."

nummer's field trials will also evalue e effectiveness of using helicopters roduce pesticides to breeding ens in remote areas.

o is continuing its "fogging" tions — the spraying of a fine mist of two or three times weekly around ern projects. This appears to be the practical way of keeping construction ers and their families from being antly harassed.

ree years now, the Chalk River ar laboratories of Atomic Energy of la Ltd. have been working with n's University in an attempt to "bug" ackfly. The idea is to give the a bath in radioactive phosphorus id then release them. The phossis absorbed by the insects and is with the fly throughout its lifespan.

way, scientists can keep a check distance and direction the flies move heir breeding sites. The flies are d by blue and white canisters — attract the insects and white to them highly visible to the human

investigators. The flies actually adhere to sticky paper wrapped around the canisters and the radio-active ones later show up as dark spots when the paper is held against X-ray film.

The World Health Organization is interested in the experiments for possible research into the migration habits of disease-carrying insects in other parts of the world.

Studies at Hamilton's McMaster University, notably under Professor D. M. Davies, include methods of rearing black flies in the laboratory. McMaster biologists reared blackfly larvae of several species to maturity in troughs containing a continually renewed flow of tap water, dechlorinated by an activated carbon filter. Yeast cells were added to the water to feed the larvae.

New hope in the continuing battle of insect versus man may come with the development of a third generation of pesticides based on the theory of attacking a harmful species with its own hormone.

All insects secrete juvenile hormone at certain stages of their development. At other stages, the hormone must be absent or the insect will develop abnormally. Studies at Harvard University, for instance, have shown that insect eggs coming into

Queen's University student returns radioactive larvae to the Chalk River. Other photos show rock smothered in blackfly larvae, spraying operations at a Hydro construction camp and children at a northern project wearing stocking caps to ward off blackfly bites.

contact with the hormone either fail to hatch or else the immature insects die without reproducing.

According to present knowledge, juvenile hormone has no effect on other forms of life. It would be difficult, too, for an insect to develop a resistance to its own hormone without destroying itself in the process.

The Harvard researchers found by accident that almost any paper of American origin contained juvenile hormone that stunted the development of European bug specimens. Paper of European origin had no effect on the insects. The source of the hormone was eventually traced to the balsam fir, a principal source of pulp.

Bit by bit, the struggle against pests such as the blackfly is being waged in a variety of spheres. Slowly the biologists are gaining knowledge that may eventually give them the upper hand. That time is unlikely to arrive, however, until man is more of a pest to the blackfly than the blackfly is to man.

lining with a silver cloud

A welder coats the teeth of a generator rotor with approximately \$500 worth of pure silver in a new process at the Peterborough plant of CGE.





Industry keeps coming up with new uses for silver, one of the most ancient of precious metals. It was mentioned around 3600 BC in the books of the Egyptian king Menes. Medieval alchemists dubbed the rare mineral Luna or Diana and assigned to it the symbol of the crescent moon.

By far its greatest single use has been for the manufacture of coinage, though both Canada and the United States are now switching to coins with a lower silver content or none at all.

Silver is also used in a whole range of products from batteries to bangles and mirrors to missiles. Photography alone accounts for about one-third of industrial needs. And demands keep soaring. A silver shortage last year precipitated a crisis in which the cost rose dramatically from a price fixed around \$1.30 an ounce. It is now well above \$2 an ounce.

These pictures show a welder spraying approximately

\$500 worth of pure silver on the teeth of a generator rotor in a new process at the Peterborough plant of Canadian General Electric. The metal will prevent galling — a wearing action on the rotor — and will increase electrical conductivity between the teeth and a retaining ring yet to be fitted.

Before spraying, the teeth were brought to a state of surgical cleanliness and preheated to about 140 degrees F. A molybdenum bonding was applied then the atomized particles of silver sprayed on. When completed, the generator will develop 150,000 kilowatts. CGE plans to repeat the process on all future machines of this size and up.

Canada ranks among the West's top silver producers. Latest figures show a production of more than 33 million ounces, of which Ontario contributed about one-third. The nation as a whole stands fourth behind Mexico. Peru and the United States.



Band B

Bandied around as it is, the term B and B nevertheless applies to last month's OMEA-AMEU meeting.

It was the biggest. And the best. The two associations, representing the elected commissioners and senior staff of the province's municipal Hydro systems, have been meeting for 59 years now. But never before has the convention so taxed the resources of Toronto's Royal fork Hotel — the largest in the commonwealth. Some delegates were turned away from at least one packed uncheon meeting and accommodated elsewhere. Business sessions were equally well attended. For some of the highlights, read on.

Face the unions delegate says

Plans to seek legislation that will classify electrical utilities as essential services came under fire at an OMEA resolutions meeting. The move would mean compulsory arbitration in labor disputes with a system similar to that employed under Ontario hospital law.

Opposing the move, R. J. Fleming, an Oshawa PUC commissioner and a trade unionist for more than 30 years, said elected commissioners should have the fortitude to face the unions.

"There are some commissions who do not have the backbone to take part in this kind of action so they come to this body asking for an easy, back-door escape," he said.

Another commissioner said the resolution ignored the fact that management and labor had established a tradition of responsibility at the local utility level. This tradition should not be tampered with.

While sympathizing with the union point of view, Mayor True Davidson, East York, said she did not think the resolution would infringe their rights. She hoped it would be

taken as a request for action in emergency situations.

Referring to the January ice storm which paralyzed electrical service across southern Ontario, Miss Davidson said: "If, at that time, we had been engaged in negotiations which had reached an impasse, think of the position in which the utilities would have been placed.

"Hydro is now an essential service to the health and welfare of the public," she added, "and when you administer a service like this you have a dagger pointing at your heart when there is a threat of strike action."

The resolution, the wording of which was amended slightly on a suggestion from the Resolutions Committee, was carried.

Commissioners fight — and win



A. K. Meen

Recommendations to abolish local Hydro commissions in the Ottawa area have been rejected thanks in part to representations by the OMEA, said A. K. Meen, Q.C.

Speaking for the association's Government Legislation Committee, Mr. Meen, himself an MPP, said the recommendations were contained in the Jones Report on regional government. Hydro utilities will not be affected by the changes.

As a result of its success, the committee will submit its views to all subsequent local government inquiries, Mr. Meen added.

"We do not make any statement as to whether a commission should be increased. in size or maintained at the same level." he said. "We simply press the point that the concept of Hydro commission operation, and management of Hydro utilities in the area under study, be retained within the concept of any regional government which, for other reasons, may be recommended."

Similar in-depth action is planned for the Smith Report on taxation, which presses strongly for a regional form of local government and contains many recommendations about Ontario Hydro and the utilities. The association will submit its views on the report by May 1.

Sarnia in the swim

OMFA delegates carried a resolution from Sarnia Hydro that noted with approval proposed revisions to the Ontario Electrical Code with regard to underwater lighting for swimming pools and asked Ontario Hydro to continue to co-operate fully in enforcing stringent electrical installations and maintenance standards.

They also requested that Hydro personnel carry out regular rigorous inspections of all swimming pools equipped with underwater lighting.

The resolution pointed out that defects can be caused by defective wiring, corrosion, faulty repairs and lack of a secondary grounding system for the lights. It added that such defects can be detected by the installation of a differential circuit breaker.

Inflation hits home

Reflecting buoyant economic conditions, peak demands on Hydro's East System were 600,000 kilowatts, or 7.6 per cent higher than in the previous winter, Hydro Chairman George Gathercole told OMEA-AMEU delegates.

In a report to a joint session, Mr. Gathercole said the increase was well above the long-term average rate of growth. Hydro's generating reserve had been less than satisfactory this winter, but "it appears we will manage the peak winter months with colors flying.

Outlining favorable operating conditions, he said the Douglas Point nuclear plant "functioned from December 15 on and was of immense assistance in meeting the province's electrical needs.'

The Chairman told Hydro utilities to expect further increases in the wholesale cost of power averaging perhaps four per cent over the next two years as a result of "a most disquieting inflationary phase." Mr. Gathercole said he believed Hydro was passing through a "transient stage" of higher costs and "we will eventually move into a period when costs will be stable."

The Hydro Chairman said rising costs are "largely beyond our control" and arise from several factors including higher interest rates, wages, salaries, materials and equipment costs, expansion in thermal generation, and more sophisticated and expensive transmission systems.

Mr. Gathercole urged utilities to "plan any rate adjustments you require in a manner that will best enable your customers to adjust to them.

'I believe it is possible," he said, "to



George Gathercole

make rate adjustments in accordance a pattern that allows for a degree o dividual municipal flexibility and yet a same time embodies a satisfactory mea of uniformity. . . . We should be const working toward a common pattern, ducive to load promotion, equality in o and clarity of understanding by the tomer.'

Mr. Gathercole said that the adoptic the new general rate by a number municipal utilities had merit. The consu tion pattern of some commercial and tively small industrial customers had changing and an adjustment of their in conformity with service costs was ducive to both equity and administr simplicity.

However, the adoption of the ge rate produced wide swings in rates shifted more cost to residential user these circumstances, the wiser course r well be to phase it in over a period of y

Dealing with the Ontario Committed Taxation's report, Mr. Gathercole said tario Hydro will oppose some prop relating to the provincial organization the municipal utilities.

"It is regrettable," he said, "tha committee's lengthy inquiry did not brace a better knowledge and unders ing of Hydro and its mode of operation

He said it was a fallacy to try to redu identical terms for taxation purposes a ness enterprise operating under publi I spices at cost and a private enterprise operated for shareholders at a profit.

He said restraints on the use of would involve "rigidities that could co Hydro to rely more heavily on borro! to finance its expansion and accord ! in the long run, impair its financial via

"There is little doubt that some (committee's proposals, if impleme would result in a fundamental change 🕴 character of the municipal utilities at W as in the relationship between the m palities and Ontario Hydro.'

But, said Mr. Gathercole, Hydro be prepared to adapt ourselves to e tions and to recognize that an inflexincompromising stance may deny us pportunity to participate fully in the er economic development ahead e ought to be prepared not only to with the times but to be sure that our will be heard in the councils vested

ies will go it alone

change."

o Hydro and the municipal utilities o it alone with lineman training "as e essentially the only employers of en in Ontario," said N. Hugh Macn, chairman of the AMEU's Man-Planning Committee.

MacKinnon was referring to a Deent of Labour proposal to form a icial union-management committee vise on regulations, training curricuexamination and trade certification.

hough our reaction to this proposed of joint administration was negative," id, "it was definitely not from a ve attitude toward joint involvement rade unions."

MacKinnon stressed that the com-'s recommendation was subject to derstanding that, as an organization, ectrical utilities continue to undern adequate training program of their There would have to be some assurhat municipal employers would use ining facilities to ensure an adequate of skill.

added that the Plant Trades Training ittee had already completed its draft AMEU training syllabus for linemen ad established a sub-committee to linate training with the Electrical s Safety Association, which will act ning agent this year.

eduling of courses will be determined a survey of training requirements. y, the individual utility will be d the total cost of training. This will mpatible with a possible pooledarrangement.

lutions broken e bundle

empt to give local utilities legal to change their wiring from overunderground and make the cusfoot the bill for work on his own y failed to win approval at an resolutions session.

man J. R. Philips said the Resolucommittee believed the proposal place too much power in the hands etility.

resolution was moved by W. R. son, Peterborough, who said that



the men in the hot seat

OMEA president J. R. Philips

John Richardson Philips is the epitome of the successful executive. He is distinguished looking, self-assured and his elevation this year to president of the Ontario Municipal Electric Association undoubtedly brings a wealth of business experience to

the organization.

His rise through the ranks of Phillips Cables Ltd., of Brockville, testifies to his ability. Mr. Philips joined the company in 1940 as assistant secretary-treasurer. Within four years he was general manager of the oldest wire and cable manufacturer in Canada. He subsequently became vice-president of finance and is now vice-president of personnel.

The company was established in Montreal in 1889 and opened a rod mill in Brockville in 1922. It now employs around 1,500 persons and handles \$60 million worth of home and export orders each

year.

But first and foremost, Rich Philips is an accountant. He was born in Montreal 60 years ago — on Christmas morning to be exact — and is the son of an electrical engineer. After public and high school he began work with a firm of auditing consultants, attending McGill University in the evenings to obtain his chartered accountant's degree. He graduated in 1931. In all, he spent about 15 years in the auditing business before moving to Brockville.

Mr. Philips and his wife, Dorothy, have raised four children. One of their three daughters is married to a West German and lives in Hanau, near Frankfurt. The couple met when the husband, who has a position

with a large mail order store, was in Canada to study business methods.

One of the Philips girls is a social worker in Toronto, another a librarian at McGill, while the son works for a national maga-



zine in Montreal. Mrs. Philips, the daughter of a medical missionary, was born in China and spent her early childhood there.

The couple live in a tastefully decorated century-old home in Brockville where Mrs. Philips grows plants in the sun lounge—"she's got the green thumb"— and her husband putters around the garden when he has time. Not that time is an abundant commodity in the Philips household.

Apart from travelling a great deal in connection with his work, Mr. Philips has been extremely active in community affairs over the years. His offices have included the chairmanship of the United Appeal, membership of the YMCA board, fund-raising responsibilities for one of the local hospitals and serving as a governor of the other. His public service record resulted in him being chosen as one of Canada's

representatives at the first commonw conference in Oxford, England, in 1 The following year he was named "Ci of the Year" by Brockville Chambe Commerce.

Mr. Philips was first elected to Br ville PUC in 1953 and has found his fi cial experience invaluable in helpin direct the affairs of the local Hydro sys. He has served three terms as chairmar during his association with the PUC also risen steadily through the upper elons of the OMEA.

Mr. Philips says he has no particula to grind during his year as president main aim is to further the objectives c association as laid down in the contion, although he realizes he will have contend with a number of problems.

The association will have to prebriefs on the Smith report on taxation instance. And then the Rand reporlabor relations will be eagerly awaite see whether any of the OMEA's remendations have been adopted.

Mr. Philips' opinion of the Hydro or ization is high. "I don't think I have such a high degree of participation is other organization," he says. "I am an at people's knowledge and at the arrof time they will spend, largely on a vitary basis, in furthering the co-ope and community use of electric energy.

"This goes for the OMEA, the A and Ontario Hydro," he adds. "They have a role to play and I am impressed the way each one plays its role. The minimum amount of friction and bick and a maximum amount of co-operation."

High praise indeed from an exection the calibre of Rich Philips!

resolutions broken

some time ago his utility started to improve the city's downtown area by placing distribution circuits underground.

"We found that certain customers objected to having to pay for being reconnected and refused to comply," he added.

W. C. Pearson, Strathroy, said that according to his interpretation of the Public Utilities Act, even Ontario Hydro did not have the authority to force persons to put in underground wiring on their premises. "We are asking to go much further than

Ontario Hydro has the authority to go at the present time," he said.

Also defeated was a resolution urging that utilities participating in marketing or advertising programs be able to opt out of contracts that were later amended.

Objecting on behalf of the Resolutions Committee, Mr. Philips said the proposal contained statements about the HOMEC schools program that were contradictory to resolutions passed at the previous annual meeting. These had asked the OMEA Marketing Committee to alter the program, and this had been done.

Commented Dr. R. H. Hay, King of this coming forward. The HOMEC at tions were made at the request of this which represents all the utilities is province."

Delegates decided to protest to the partment of Transport about charger crossing department property.

C. A. Baker, Trenton, said the rescale was a result of the DOT research the revising charges for easements acrost Trent river system. The departmen charging \$40 a year for an easemer

U president G. Askwith

and punctuated with sharp bursts of the wireless signal winged over the cand across North America into the tive earphones of an ardent amateur operator in the City of Ottawa.

vas Australia calling and a new confor F.L.G. (Lloyd) Askwith, whose n letters VE3YO have been spelled dots and dashes by fellow members airwaves fraternity from Hawaii to pore for more than 30 years.

etually, I prefer bringing the parts her and making them work as a unit be business of chatting over the air", ins Mr. Askwith of his radio hobby—ference he'll be able to indulge in his role as president of the Association of cipal Electrical Utilities. It represents echnical and administrative side of 350 utilities in the province and its y acknowledged effectiveness has largely due to the "parts" functioning whole to the advantage of all.

penchant for hard work and a wealth ow-how in a wide range of utility tions are two of the outstanding of the standing of the that the lean and serious Mr. With brings to the president's job. He sistant chief engineer with Ottawa of and can draw on 20 years of the ence in the operation, planning and deering of utility distribution systems. Operate for extra-curricular work has demonstrated at the association completed, where he has been active in demanding areas of AMEU involve-from labor relations to the establishing and ards.

n in Ottawa, Lloyd Askwith traces his association back to his undergradyears at Queen's University where he need his B.Sc. degree with honors in ical engineering. During the summers orked on line crews and as a substaperator with the former Ottawa Light and Power Company.

king back, the new AMEU president that there were only about 14 stu-

dents in his Queen's class of 1940, yet it contributed such utility notables as Bruce Annand, Oshawa PUC manager; Harold Smith, chief engineer of Ontario Hydro; and John Dobson, the commission's engineer in charge of load forecasting.

Lloyd attributes his early interest in engineering to his father, F. C. Askwith, a prominent civil engineer who was Ottawa's commissioner of works and city engineer for many years prior to his retirement.

An "old salt" from the utility engineering point of view, Mr. Askwith has also logged some genuine sea time as a member of the Royal Canadian Navy Volunteer Reserve, which he joined immediately after gradua-



tion. His wartime career included a stint with the Royal Navy as a sea-going radar officer. He also served as officer-in-charge of radar maintenance in Halifax and on the staff of the Canadian Naval Mission in the United Kingdom.

After the war, Mr. Askwith joined the distribution department of the Gatineau Power Company before moving to Ottawa Hydro, in 1951, as assistant stations engineer. He was distributions engineer from 1952 to 1955 when he became assistant chief engineer.

Supplying the electrical requirements of the nation's capital involves meeting the needs of 100,000 customers with a peak demand in excess of 350,000 kilowatts. It's particularly challenging in that the entire area is under the scrutiny of official and self-appointed capital planners with

an eye for the aesthetic and little sympathy for problems of urgency or economics.

As Mr. Askwith sees it, the greatest single problem facing the utilities in the province today is simply the ability to build fast enough to keep up with the fantastic load growth.

"Percentage increases are deceptive", he points out. "A 10 per cent annual increase now may be the equivalent of a 30 or 40 per cent increase of 10 years ago. The incremental factor is at work and it's like a snowball. Yet ours is an industry where shortages and delays cannot be tolerated."

Never reluctant to shoulder more than his share of association responsibility, Lloyd has assisted in the work of numerous AMEU committees and sections. Primarily interested in the engineering aspects at the outset, he later served in the general administration and association operations sections. He has chaired three of the AMEU's four boards.

During his term as chief executive, Mr. Askwith would like to see a program commenced to stimulate interest in the utilities among young people launching careers.

"While there is no great concern at the moment," he points out, "I can see a potential shortage of both tradesmen and professionals developing in the years ahead. In an era of space travel and razzle-dazzle electronics, the term 'public utilities' hasn't much glamor."

He believes effective steps can be taken to interest university, technical and high school students in the excellent opportunities opening up in the rapidly growing utility field.

Mr. Askwith is a past-president of the Electrical Club of Ottawa and a member of the Engineering Institute of Canada.

Aside from his interest in amateur radio, he's a devoted skier and makes use of the fine facilities in the Gatineau Hills — virtually on his doorstep. In the summer, it's water skiing and cottaging — pastimes he shares with his wife and four children. His eldest daughter, Penny, is a student at Carleton University.

ould set a precedent for railways, ays and even private property. "It amount to a lot of money on a ce-wide basis," he said.

ed down was a proposal asking by Hydro to end its requirement for shing depreciation reserves for street g, and to leave the matter to the ion of the local utility and municipal ation. Also thrown out were resolutimed at exempting local commission Department of Municipal Affairs stration and at reminding the provinvernment that "Ontario Hydro was

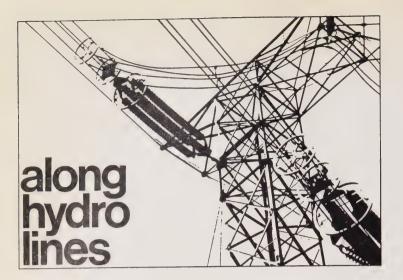
better qualified than the Ontario Municipal Board to supervise the affairs of Hydro departments of municipalities that fell into financial difficulties."

"In our opinion, the Department of Municipal Affairs is both adequate and prudent in this area and such a reminder is unnecessary," said Mr. Philips.

Delegates carried a resolution asking Ontario Hydro to take steps to allow municipal utilities to enter the housing mortgage field. This would increase their competitiveness in the residential heating market.

A proposal asking Ontario Hydro to "exert all possible influence to ensure that full electrical energy be utilized in further Ontario Housing Corporation projects" was referred back to the Resolutions Committee.

Referred to the Power Costing Committee was a proposal urging that no increase in the wholesale cost of power charged by Ontario Hydro be made effective until, where necessary, the local commission received approval to raise its retail rate. Both wholesale and retail rates should become effective at the same time, the resolution stated.



Farming better electrically

A family farm near Ottawa that's almost as old as Confederation was the first in Ontario to receive a "Well-Electrified Farm" citation. Ontario Hydro Chairman George Gathercole, acting on behalf of the Canadian Electrical Association and Hydro, presented a certificate and identifying sign to Harold Crawford, operator of Golden Dell Farms, of Richmond, southwest of Ottawa.

Harold, and his wife, Marie, have operated the farm since 1962. His grandfather settled there nearly 100 years ago and both Harold and his father were born on the property. The 450-acre farm uses more than 72,000 kilowatt-hours of electricity a year, compared with a provincial average of less than 11,000.

Top Hydro moves

Omer S. Russell, at present executive manager of Ontario Hydro's seven regions, has been appointed to Hydro's top personnel job. Next month he will succeed C. B. C. Scott, who is retiring as assistant general manager — personnel.

Mr. Russell is a graduate of Queen's University and has served in a wide variety of positions during his 38 years with the commission. He was operations engineer in Western Region for six years, manager of the former West Central Region for five and spent another six years as director of Management Services. He has held his present job for four years.

In his new capacity, Mr. Russell, seen below with pipe-smoking Mr. Scott, will be responsible for the Personnel Branch, one of



Personnel job

the five administrative branches of Ontario Hydro. He is a mer of the Association of Professional Engineers of Ontario, Institute of Electrical and Electronics Engineers, the Electrical of Toronto, the Canadian Club of Toronto and is a Sco

Mr. Scott joined Hydro in 1957 after many years' experiment the manufacturing, personnel and industrial relations find During the second world war he was a member of the Regional War Labour Board for Ontario and in both 1949 and 1961 resented Canadian employers at the International Labour Organition conference in Geneva. He comes from Oshawa and graduate of the University of Toronto.

Leprechauns and blarney

With St. Patrick's Day only a breath away, it was only na that Toronto Hydro's Quarter Century Club banquet should into an Irish one. But it wasn't Chairman John McMechan, still has a touch of the brogue in his voice, who provided blarney. Instead, it was Mayor William Dennison. Not only he sprinkle his speech with Irish jokes, he read a poetic I and sang about the Irish.

Over 240 attended the 40th annual banquet. One re employee now living in England even turned up. Sever



A pin for the lady

employees entered the veteran ranks and another seven me their 40th anniversaries. Shown receiving her 25-year pin Mr. McMechan is Marion Wicks, secretary in the apply department.

In serious vein, Mayor Dennison told the members that were a "very dedicated group". They were the backbone system, he added.

Flower power (cont'd)

Writer Paul Chisholm stumbled across a bit of coincide news when he visited Brampton's Calvert-Dale Estates to this month's story on the flower business. He discovered Ontario Hydro's Brampton area staff had moved in next of the move consolidates office and maintenance staff under roof. Since 1948, office employees have been operating from 80-year-old schoolhouse. Their new building did, in fact, the Calvert-Dale.

Inquiring minds

Four industrial research institutes, first of their kind in Ciacare being established to encourage more effective applicant science and technology to the nation's industry. The

ertment of Industry has earmarked \$746,000 for the projects. It is institutes will be located at McMaster University in Hamilahe University of Waterloo, the University of Windsor and the Scotia Technical College in Halifax. All four will be non-making, with similar goals but varied approaches. Their job to apply scientific and engineering methods to problems stry is unable to solve alone.

ch of the institutes will negotiate contracts for grants from stry under which they will concentrate on specific problems.

will also perform limited training.

years later

in 1910, when the editor of the Durham Chronicle asked her ce on a correspondent's job, Ethel Maud Queen didn't have deas of winning an award. But 58 years later she did win. e Ontario Weekly Newspaper Association's convention in ara Falls last month, she was presented (photo) with the rio Hydro country correspondent accolade by James A. director of public relations.

sides writing steadily for the Chronicle, 82-year-old Mrs. n worked for the now defunct Durham Review for 15 years



pondent makes news

ne Mount Forest Confederate for 10 years. Last year, Mrs. n marked her diamond wedding anniversary. For 50 of years she and her husband farmed in Agremont township. If they live in Durham.

he same convention, D. P. Cliff, Hydro's first vice-chairman, red an address for his commissioner colleague, R. J. Boyer. liff traced the evolution of Hydro in Ontario and mentioned trends.

soal-burning plants, he said that they were still necessary to short-term heavy demands in the daily supply of power. ar stations, by their very nature, were better suited to steady the-clock production.

aking of the rising demand for electrical power, he said: "It en doubling every 10 to 12 years for the past 40 years. Our t resources total about nine million kilowatts and forecasts o a demand approaching 10 million kilowatts by the end year."

wtime spree

o's biggest city — North Bay — held its third annual Winter nival and billed it a "coming out" one. At the beginning of r, amalgamation with Widdifield and West Ferris gave the



Where DID you get that hat?

city an area of 130 square miles and was the reason for the coming out party.

The three-day celebration featured everything from a pancake breakfast to dog sled races with a sprinkling of fireworks and a 250-pound cake thrown in for good measure. Besides officially opening the carnival, Premier John Robarts cut the huge cake and crowned a carnival queen.

North Bay Hydro staffers did a little crowning of their own. Shirley Forsman and Valerie Novisku set Jack Foreman's official blue and white carnival toque just right.

Profits from pollution

Little wonder 18-year-old Murray Meldrum has mixed emotions about air pollution.

For dirty air has been both unkind and kind to the Grade 13 student at Parry Sound High School. About three years ago polluted air cost him a cross-country race win at Hamburg, N.Y. He blames foul air for him falling flat on his face about 30 feet from the finish line.

But last month it was dirty air that helped him out-distance a dozen other competitors in the secondary school impromptu speech section of the Ontario public speaking contest finals at Toronto's King Edward Hotel.

For the broadside he levelled at industry, Murray walked off with \$300 in prize money, a large shield for his school, a smaller one for himself, a scroll of merit and a set of encyclopedia.

Thirty-nine contestants participated in the provincial finals. The contest is co-sponsored by Ontario Hydro and the Ontario



Polished trophies, polished speakers

School Trustees' and Municipal Councillors' Association. More than 300,000 students from across the province took part in the various levels of the competition. At the zone levels, prizes are donated by the OMEA, and by the AMEU at local speak-offs.

Joanne McMaken, an 18-year-old Grade 12 student at Timmins High and Vocational School, took top honors in the secondary school prepared speech section with her depiction of the plight of Canadian Indians. She won \$300 and other prizes.

And 12-year-old Janice Tufford, who attends Grade 7 at Southwold Central School, just outside St. Thomas, called on her audience to add a little praise to their everyday speech and less criticism. She won \$200 in prize money and became the province's top elementary school speaker.

Runners-up in the various categories were: impromptu — Richard Walters, Notre Dame College, Welland, and Janice Litt, Beaverbrae Secondary School, Kenora; prepared — Roger Calverly, Lindsay Collegiate, and Jaclyn Bullock, Grantham Secondary School, St. Catharines; elementary — Gordon Matheson, Sheppard Avenue West Public School, North York, and Martha McIntyre, Westmount Public School, Fort William.

Hydro Chairman George Gathercole presented the trophies and prize money. He is pictured, overleaf, with the three top speakers

— Joanne McMaken, Janice Tufford and Murray Meldrum.

municipal briefs

The lowly tea kettle, or at least repairs to it, contribute to the revenue of Stratford PUC. That's the word from Manager D. M. Seath, in his review of 1967. The PUC operates a service centre for customers as a "public relations" tool. He points out that the local electric trade welcomes this PUC service, and frequently recommends it to customers. Looking to this year, the manager forecast an electrical department income of \$1,923,832 from all sources.

Harold Reece, Cayuga's reeve for seven years and still a member of the Hydro Commission after 28 years, was honored at a recent banquet. Among other items he was given a portrait of himself which will hang in the municipal building.

Bill Orton, an original with York Hydro, has retired. When the borough took over the system in 1941, Mr. Orton went on loan from Toronto Hydro, where he had been for 17 years. He never went back. After setting up a line staff, he became assistant to the general manager and was made assistant general manager — engineering in 1960.

Forty years with East York Hydro have come to an end for Stirling McCleary. At a well-attended banquet to honor the superintendent's retirement, he was presented with a movie projector. Mr. McCleary, who started as a lineman in 1928, is an ordained minister and rector of Floyd Avenue Baptist Church. George Chivers succeeded him as superintendent.

Getting the jump on the Ontario government, municipalities in the southeast section of Parry Sound district have already formed a committee to study regional government in the area.

A new chapter has been added to the Ontario Electrical League. Called Metro West (Toronto), the chapter is headed by Joe Lovsin, of the John Wood Co. The league, not quite two years old, has 30 chapters across the province. It is open to all facets of the electrical industry from manufacturer to contractor and distributor.

It was all public relations at a recent meeting of Preston PUC. Chairman George Cook showed other commissioners "annual report" and "at your service" pamphlets prepared by the OMEA-AMEU Public Relations Committee. It was decided to publish similar pamphlets for mailing to customers. The commission also

wants informal meetings with council. "Nobody knows who utilities are doing and we have nobody to blame but ourse said Mr. Cook.

Three Hydro commissions are under fire. Alderman Thomas has asked Windsor council to place administration of the tricity and water systems under a committee of council while River Council has also passed a by-law introducing a propodissolve the local commission and turn its duties over to co A public meeting at Rockland has decided that no referend the abolition of the PUC there will be held at least until December's elections.

The old wooden hydro poles on Weber Street East in Kitchener have bowed out to 50 smooth concrete ones. Kitchener manager Alfred Thaler reported that the change was maconjunction with street widening at a cost of \$90,000.

Safety town

While it may not sound too logical, a town has received a award in a higher category than two Ontario cities.

It happened during presentation of Electrical Utilities Association low accident frequency awards at the 59th a OMEA-AMEU meeting. Mississauga Hydro took the award over 250,000 man-hours category. It's the third award for N sauga, although in 1961 and 1964 they were won und name of Toronto Township Hydro.

Waterloo PUC took home the under 60,000 man-hour with no compensable injuries in 55,556 man-hours. Ch PUC took the in-between category with no accidents in 18 man-hours worked.

For safety's sake, Canada's Centennial year was a goo Of the 175 utilities reporting to EUSA, 122 were with accident.

Among the list of electrical utilities that experienc accident-free year, with man-hours worked in bracket: Stratford PUC (115,419); Galt PUC (91,105), Woodstoc (82,013), Cornwall Light and Power (78,882) and Whydro (85,765).

Plane snagged line

Galt PUC has paid a pilot \$1,690 through its insurance co after he flew into a power line and crashed. The settleme arrived at after the PUC agreed to drop a counter-claim for damage.

The plane, flown by a Pembroke area veterinarian, crash the Grand River in September, 1966.

The reason given for the crash of the float-equipped plant the presence over the river of a power line of which the wasn't aware. He said the line had not been there the last 1 landed at Galt.

February energy production

Primary energy provided by Ontario Hydro in Februatotalled 4.83 billion kilowatt-hours, an increase of 1, per cent over the same month a year ago. For the fit two months of 1968, the total is 9.97 billion kilowathours, up 12.1 per cent over the same period last year.

Adjusted for seasonal influences, primary energy mand in February was 4.60 billion kilowatt-hours, per cent less than the previous month. The seasonadjusted total for February represents 55.34 bill kilowatt-hours at annual rates. This is 396.73 per cof the energy demand in 1949.



slation has been much in the news, of late, we were very much relieved when the boys tawa finally agreed to retain the death lty only for murderers of policemen and n guards. Among the categories our lawers were considering placing out of bounds urderers were children aged 16 and under, les of any age and citizens helping to tain law and order.

booked for a while there as if they were zeronon us — like they'd be hanging everybody ne slayers of Hydro News columnists and we have too many of those — or do we?

anges are also being proposed in the federal governing divorce and homosexuality — a of affairs which prompted this sardonic vation from Professor Marcus Long in an ess to the Electric Club of Toronto:

ou may now love your neighbor to your scontent. It her husband objects, she can divorce on the grounds of cruelty. It she ts, you can proposition her husband."

nd sakes — and to think they used to frown for coveting our neighbor's ox.

ted as a class for stating the obvious with profundity as to win acclaim rather than le, the psychiatrists are at it again. A Hamiliactitioner recently observed that if all the were known in advance, many couples decide not to marry. So what else is new? We means' of continuing the human race I have to be found if more engaged couples the full facts of married life, he went on to and.

I, there's still hope for the "old means" if bung dandies of Cambridge University are iterion. Mixed views were expressed by the grads in a recent opinion poll as to the tability of extra-marital shennanigans, but yes were unanimous in voting for a co-ed rather than the present system of segregate sexes in different colleges.

self, this is reassuring — considering that ems to be suffering a severe set-back in irity among affluent societies where televind other amusements are in direct competialling birth rates attest to the success of ernatives.

of life's little blessings are without their acks and it looks very much as if "the pill" the exception. At least one American

doctor is convinced that ladies who have been warding off the stork with the pellet are destined to go bald. It's also predicted that some hormones of the type used in the pill are likely to have a masculizing effect on some women.

In a way it will be nice to welcome the girls into the club. How milady will react to the bear grease and other obnoxious concoctions it's customary to apply to the glistening male dome in the hopes of coaxing forth a bit of fuzz is something else again. But the combination of bald heads, bulging biceps and bikinis is going to call for a little mental adjustment on both sides.

■One other recent development in this area leaves us completely in the dark. It's a report from London which goes on to say: "A scientist has discovered by accident a chemical which could lead to a 'morning-after' contraceptive pill."

The morning after what, for heaven's sake?

■London PUC is in the market for a new piece of transport equipment, but it doesn't know how much to pay. It's looking for one of those widetrack jobs with lots of horsepower, big trunk, four-wheel-drive and solid ivory bumper guards. It is, in fact, after an elephant.

A. L. Furanna, general manager of the PUC, has recently been authorized by his commission to obtain prices on a new elephant. But don't jump to conclusions. The pachyderm will not replace a bucket truck nor will it be used in the utility's street light maintenance program. It will try to till the commodious shoes of thrae-year-old Thaila, who died last summer. Its only duties will involve amusing children in Storybook Gardens, which are administered by the PUC's parks and recreation department.

Sticking with the four-footed set but dropping down a size or two comes this item from Chatham. It's about Pete, the plugged-in cat who gets his kicks from flicking the house lights or turning the TV set on and off at crucial moments in the program.

Pete's not particularly tall for his age and, at three months, can't reach the light switches. Instead, he pulls out the plug with his paws and after pandemonium has reigned sufficient to suit him, pushes it back in. To date, he can't tell drama from commercials, but he'll be a real asset when he learns.

According to the *Chatham Daily News*, Pete is now learning to open and close doors — presumably so he can go out and find a job.

■They lit 200 million candles to St. Patrick down Niagara Falls way on March 17 and in the process turned the gorge into a giant creme de menthe parfait large enough to satisfy the appetites of Irishmen from Tipperary to the Orange Free State. It was done with those giant electric searchlights normally used to illuminate the falls, except that all were fitted with filters of the same color — green.

Illumination of the cataracts dates back to 1860 when they were lighted up to mark a visit of the Prince of Wales. In describing the change from white light to red on that memorable occasion, the *Times of London* was inspired to write:

"Niagara seemed to turn to blood in color, but so bright, so lurid in its deep effulgence, that a river of seething, roaring, hellish fire seemed to have taken the place in an instant of these cold, stern, eternal falls."

So much for the claret treatment of 1860.

Now if they can only figure a way to give us Scotch on the rocks for Robbie Burns' Day, there'll be no hard feelings. St. George is a cinch. Just leave things alone and we'll settle for good old nut-brown English ale, which is closer to what the waters resemble during the daytime.

"One of the more mystical areas of marketing is the non-verbal communication" comments Marketing Communications magazine on the new symbol programs adopted by Consolidated Edison and the erstwhile Radio Corporation of America.

In both instances, the full name is dropped, except for legal documents, and the two become Con Edison and RCA. In Con Ed's case, the program involves a color switch from yellow to "Edison Blue" to characterize the company's new slogan "Clean Energy."

In making the switch the company has only done what so many of its customers have urged it to do, the magazine suggests nastily — "turn blue."

"Lest the scoffers take over," Marketing Communications continues more kindly, "it should be noted that the measure of a communications effort is the performance, not the promise. Edison blue and the RCA trademark already are working. There is a new sense of excitement and contemporariness to the corporations' communications. The new approaches are working if only because the communications people want to make them work and their enthusiasm is contagious."

Shades of the new look for Hydro in Ontario! It's been less than three years since the orange and vermilion "HO" symbol commenced appearing and it's safe to say that few people in the province are unaware that it stands for Hydro. It's been adopted by 125 municipal utilities in the province.

But that bit about enthusiasm being contagious is still very much to the point here at home. Lose this and you pull the plug, symbolically speaking, on the whole program.

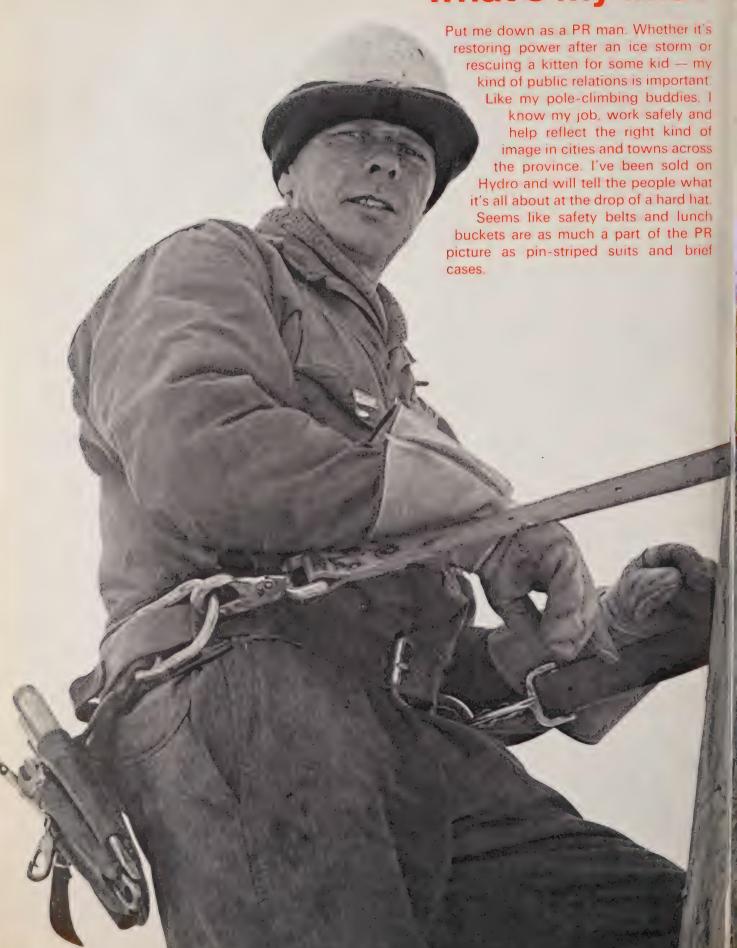
■Talking about communications, there's the story of a colossal failure on the part of the computer in the field of translation. The Russians, it's said, fed the phrase "the spirit is willing but the flesh is weak" into a computer which came up with this prompt but somewhat inadequate translation — "the booze is good but the meat is lousy."

The very thought is enough to make Dominion Store ad writers take to drink and it suggests that, in their present state, computers can communicate about as well as a Cockney tishmonger trying to explain a cricket match to the Volga boatmen.

Finally, there's bad news to report for those of us whose last names commence with the letters from S to Z. According to statistics compiled by one British doctor, we're doomed to shuffle off this mortal coil considerably sooner than our more fortunate friends with monikers starting farther up the alphabet. Zeke Aaron can expect to outlive Aaron Zekial by at least 10 years — or so this absurd thesis would have us believe.

Just what in the world initials have to do with longevity evades us and we don't intend to pay the slightest attention to his idiotic findings. We'll just go on writing this column by Don Rite into our dotage. Would you believe . . . the May issue?

what's my line?





togetherness is a high-voltage line
 the light fantastic

· eight steps to Lake Erie



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contents

the cover

Silhouettes against a web of structural steel, two construction workers descend a transmission tower somewhere in Ontario's north. They're building a 500-mile interconnection that by 1970 will link electrical utilities from Saskatchewan to Quebec. For them it's the end of a day; for Ontario Hydro the dawn of another. More on this giant undertaking appears on page 12.

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The coal carrier Canadian Century eases her huge bulk into the lock of the Welland Canal from Lake Erie. She's bound for Toronto a generating stations with one of the season's first shipments of Un States coal. Canadian Century is the largest boat plying the St. Liverence Seaway and, in the interests of speed and economy, Searly officials are doing their best to encourage maximum-sized vess and they've also introduced an electronic control system and have stated work on a \$110 million eight-mile canal that will skirt the City Welland. The canal will improve navigation by eliminating bridges difficult curves. See page eight for a feature on this busy waterward.



lention insulin, and e names Banting nd Best roll off /eryone's tongue. ut the two young anadians who back the thirties eveloped the orld's first pracal electron croscope are atively unknown. leir names are mes Hillier and bert Prebus. Their markable and glected story is told

re by Hal O'Neil.

"Making the invisible visible, two young Canadians have developed an electron microscope which magnifies a grain of sand to the size of a 10-storey building and penetrates a barrier which has baffled man since the beginning of time."

An impressive statement, even in this day and age. But this was a comment on an incident that took place 30 years ago this spring.

Just what the development of a super microscope by two University of Toronto post-graduate students, James Hillier and Albert Prebus, will ultimately mean to research is still hard to judge. Hailed, in 1938 as "the miracle of science," the electron microscope was like a key. With its ability to magnify objects 30,000 times and more it opened a door previously locked to scientists around the world.

Few Canadian children recognize the names Hillier and Prebus as they do Banting and Best, the discoverers of insulin. But the electron microscope is widely regarded as the greatest single investigative tool yet discovered for research into malignant diseases and it is invaluable for identification of viruses. The instrument played a vital role in stemming the incidence of crippling poliomyelitis, for it is doubtful that Salk vaccine could have been developed without it

Actually, the idea of the instrument wasn't new when the two students started work on it. In 1935, the late Professor E. F. Burton (there's now a microscopists' society named after him), head of physics at the U of T, was visiting Germany and saw a ponderous electrical gadget capable of making enlargements.

It depended for its operation on a beam of electrons, but had the same magnification limitations as a standard optical microscope — about 1,500 times the subject's actual size. On his way back, Professor Burton wrote down what his trained eye had seen. It would be two years before he made use of these observations.

At that time, two honors students were doing post-graduate work at the university.



Dr. James Hillier

Independently, Albert Prebus, an Edmonton student who had attended the University of Alberta, and James Hillier, of Brantford, had elected to do post-graduate work in electron optics.

As they were the only two men in Canada engaged on such research, they were allocated the same laboratory. And to this fact, both men attribute the development of the electron microscope.

Hillier later explained: "I had no intention of going into that phase of electron optics. It was too big a job for any one man to tackle alone. If we both hadn't got the same idea at the same time, I don't think either of us would ever have attempted it."

Construction of the microscope was carried out in the face of limited finances. No budget of major proportions was available for the project. So the two adventurers became their own machinists, laboriously fashioning intricate components in the machine shop of the physics department. When finished, the instrument was literally a "home-made" contraption completed at about one-tenth the cost of the German instrument, but many times better.

Along the way, Professor Burton had offered advice from his earlier observations. As a man who was deeply immersed in cancer research, he could see the microscope's tremendous potential.

The new microscope used electron beams instead of light rays. It's a fixed law of physics as immutable as the law of gravity that no object smaller than three-millionths of an inch can be seen by light. This ultimate had been reached with a microscope capable of magnifying 1,500 times.

Light waves are just too long to pick up so small a speck. They either pass through or around it. The only reason we see an object is that it interferes with the passage of light. All we see is the amount of disturbance or diffusion created in the light waves on their way to the eye.

Electrons, like light, exhibit the same properties of waves, and objects in the path of an electron beam disturb its passage. And if focussed on a fluorescent screen, the electrons will leave a visual impression, or silhouette, of objects they encounter. Their wave length, however, is normally about 1,000 times shorter than light and can be made even shorter. Thus matter of almost infinitesimal size can be seen.

The original microscope is much the same as present-day models, looking like a cannon barrel about six feet long. An electron source at the top is provided by a simple tungsten filament, like that in a light bulb, heated by an electric current. Any filament heated in a vacuum by an electric current gives off tiny negatively-charged electrons. The trick is to find a system which will concentrate them along a clearly defined path at a constant speed from source to eventual destination.

To solve the problem, Prebus and Hillier inserted a metal plate with a tiny hole a short distance below the filament, and grounded it. When a high voltage was applied between the filament and the plate, the electrons were forced through the hole at tremendous velocity and continued on in a narrow beam through the object under study. The velocity of the beam was controlled by varying the voltage. In the original microscope it ranged around 45,000 volts, but today's voltages are much higher.

Electromagnetic collars around the microscope focussed the electron beam in much the same way as a glass lens focusses light. The amount of current flowing in the electromagnets determines their strength — the stronger the magnet the greater the effect on the electrons. Thus focussing is accomplished with a rheostat that adjusts the current.

Following the process from top to bottom, it goes like this. Electrons pass from the filament through the hole in the metal plate and then to a magnetic lens. This focusses the beam to a pinpoint directly over the object being studied. A short distance below, the beam passes through another lens and falls on a fluorescent screen, producing an image some 200 times the object's actual size. This screen, pierced by a tiny hole, is moveable so that the operator can select the area of the image he wants to study. He manoeuvres that part directly over the hole. The electrons that have "seen" the part pass through the hole, another lens and then on to a second fluorescent screen. At this stage the image is magnified, say 200 x 200 times, to

produce a final magnification of 40,00

To obtain a photograph, the screen i moved and the beam allowed to fall photographic plate instead.

While the most dramatic effects of electron microscope have been in medical and biological fields, probably greatest economic effects have been in dustry, particularly in the study of a and metals. It has, in fact, been a foun factor in a new branch of engineering comaterials science.

The electron microscope simplified with such metals as nickel, which is portant because of its ability to comwith other elements. Internal structould be studied with the electron micrope or off-shoots of it like an elemicroprobe. Blind alleys were queliminated with a greatly enlarged lotthe new alloy.

One of the early "gimmicks" execute the two students illustrates its use in many They photographed the cutting edge razor blade and magnified it 30,000 to Despite being sharpened to the kell degree possible, the edge looked some like the profile of the Rocky Mountain

Perhaps the best insight into the s ness of the world of electron micros can be gained from remarks Dr. I used 30 years ago. "Quotations or head of a pin? That's old hat. Now we can write your name on the back microbe."

And what of the two scientists todic Within a few years of building prototype, the U of T researchers let the United States. Dr. Prebus we Ohio State University at Columbus, when is now professor of physics. Dr. moved to RCA Laboratories in New J. He is now vice-president of research

In 1940, Dr. Hillier was invited to RCA and was given his own laborand a free hand to work on the elemicroscope. Within four months his come up with a model that could be mercially produced and retailed for less \$10,000. All this at the age of 24.

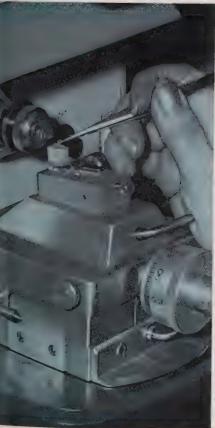
Because of his job, which is o liaison between the scientist and the nosed businessman, Dr. Hillier hasn' an electron microscope in 15 year he's quick to point out that they are lent in RCA laboratories around the

Today's microscopes are capal magnifying 1,500,000 times. But w tomorrow?

Well, scientists of the Max Planck sin West Berlin have started a twy testing period on an electron micro that will, they say, turn dreams of roatoms visible into reality. With it, movill make the greatest step forw medical history. But it took two Canadians to show the way.

At Toronto's Hospital for Sick
Children, the electron microscope is
used in cancer research. A specimen
is frozen in resin, then sliced ultrathin by a diamond blade before it can
be studied in the cannon-like
electron microscope.
The result can be seen on page 1.
It's part of a cell taken from a rat's liver.









by Les Dobson

Scarcely a breath of spring air brushed the polished surface of Lake Ontario. Half a mile out, a survey boat drifted peacefully in the weak sunlight.

Suddenly, a tiny pinpoint of light winked across the water. So narrow was the beam that the pilot of the boat was unable to see it until directed into its path by radio; so intense that he had to look at it through a darkened visor. He revved the motor, headed in.

As the boat homed along the pencil-thin beam, a second crewman worked ultrasonic equipment that etched out a continuous profile of the lake bed. Thirty feet. . .twenty. . .ten. . . went the soundings. Warily, the second man kept his head averted as the craft closed with the light where the lake floor heaved up dripping to meet the shore.

The men were Ontario Hydro surveyors. The light they were using to help them compile an accurate underwater map was a laser. The job was simply one more application for a remarkable source of energy already dubbed the light fantastic by all but the most technically blase.

Light Amplification by Stimulated Emission of Radiation is a brand new science. Ten years ago it was theory, a set of mathematical symbols on paper; today lasers are employed throughout the world. Perhaps no other technology has so rapidly arced the gap between laboratory and general use. Predictions for the U.S. alone say the industry will top a billion dollars yearly by 1970.

Stranger than science fiction, the laser may yet transform Wellsian death ray fiction into fact. Focused to a pinpoint, laser light burns hotter than the surface of the sun. It will blast its way throu diamonds; vaporize any substance k

One day the laser's searing light may disintegrate hostile missiles, or it ma used by an enemy with devastating Like the atom, though, it may be use evil or good. Because its heat will cauterize flesh, the laser offers surge their dream of a bloodless knife. Alre eye doctors are using relatively wear beams to repair torn retinas.

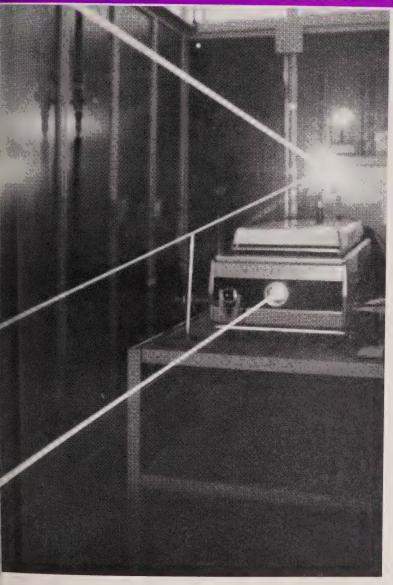
In the field of communications, the has enormous potential. Overcrowd of the air waves is a mounting prob Today's microwave systems are limit about 17,000 voices; some day we unable to contain the communication flood. A single laser has the theoret capacity to carry all the telephone, and TV traffic now being handled by every radio system in the world.

One drawback, though, is that bad weather interferes with laser light. I haps the answer is to focus the beat along tubes that will shield them fr vagaries of climate.

Early proof of the laser's power car 1962 with an experiment at the Ma setts Institute of Technology. There team of scientists succeeded in lighup the moon. Three seconds after li the campus grounds, bursts of intel red light were hitting the bleak lun! landscape. They came from a ruby just six inches long, and so little di beam diverge that it illuminated as hit less than two miles across.

Man had created a light bright encil illuminate an extra-terrestrial body 9 miles away. Yet this astounding felo just four years after Dr. Charles H. W of Columbia University, and Dr. A L. Schawlow, of Bell Laboratories





Argon ion laser, one of the first of its kind in Canada, is used in molecular research at the University of Waterloo.

published the first paper describing how a laser might be made.

Townes and Schawlow had theorized in 1958 that electrons could be induced to emit light waves of exactly the same energy and frequency. When focused. these independent emissions would form a coherent beam of great power (an ordinary light bulb emits light that is incoherent. Color is light radiated at different frequencies and a light bulb radiates every color in the spectrum).

The idea that electrons can emit light wasn't new, of course. All fluorescent materials work this way, the most obvious example being the television screen. But the idea that such light might be controlled led to the break-through within two

Work on constructing a laser began in a number of laboratories. Dr. Theodore Maiman, then at the Hughes Aircraft Company in Malibu, California, succeeded in coaxing coherent light from a ruby crystal containing atoms of chromium. It was the world's first laser.

A ruby laser usually consists of a synthetic ruby rod surrounded by a spiral flashtube. One end of the rod is silvered. the other only partially silvered. When the flashtube is energized, the powerful flood of light excites chromium atoms in the ruby causing their electrons to jump temporarily into higher energy levels. However, these electrons soon drop back to their former levels, each releasing a photon or tiny "bundle" of energy in the process.

Some photons start to oscillate between the reflecting ends of the ruby, triggering other excited electrons until a whole stream of photons bursts through the partial mirror in one swift pulse of coherent







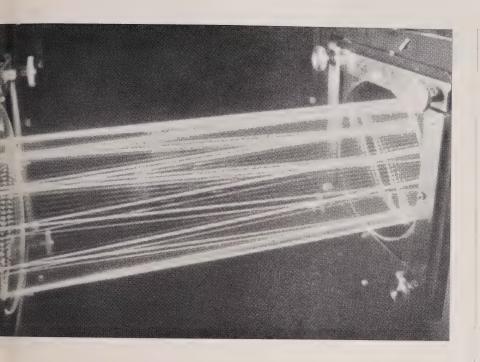
light. The entire sequence takes but a thousandths of a second.

Although the first successful laser cotained a ruby, such crystals have no herent magical properties. In fact, scitists quickly discovered that combine of gases will lase, and they even properties action in liquids, plastics and glaser action action in liquids, plastics and glaser action in liquids, plastics and glaser action in liquids, plastics action actio

Neither do all lasers emit visible light. One of the most powerful yet invent the carbon dioxide laser — shoots of a continuous beam of intensely hot built visible infra-red radiation. Some lase emit ultra-violet rays; others work be in conditions of extreme cold. One to they all do, though, is demonstrate to genius of the late Albert Einstein.

As far back as 1917, Einstein proved y analysis that electrons can be stimulated to jump from one energy level to an by a photon. He also said that where photon nudged an electron into ancess.

Ontario Hydro survey crew uses radio to guide boat into beam emitted by a transit-mounted laser. The boat's pilot wears a darkened visor to protect his eyes. Below: laser beam is reflected backward and forward in an experimental model of a high speed information storage system.



, the electron would emit another on of the same frequency and travelin the same direction as the one that . This is exactly what happens in a

rs make admirable range finders.
U.S. Air Force Systems Command ates one in the Sacramento Mounof New Mexico that is far more acted than radar. While working on much ame principle — measuring the time es a signal to reach its target and be sted back — the laser instrument narpossible error to about 25 feet over tance of 500 miles.

year, the Raytheon Corporation of ham, Mass., reportedly began produc-50-foot long laser capable of conating 1,000 watts of energy into a less than two inches across. One hought by the U.S. Defence Depart-The government refused to comon the purchase.

a similar Raytheon laser, researchers Massachusetts Institute of Techy found they could crumble rock in conds or less. Apparently, in that me, the laser light aged the rock of years so that its structure

disintegrated. Now a team of MIT scientists is trying to develop an entire rock drilling and tunnelling system.

Laser beams are also being used to keep conventional tunnelling machines within fractions of an inch of their course. In fact, they're proving invaluable in a variety of situations that demand hairline tolerances and pinpoint accuracy. That's why Ontario Hydro engineers have used them on several jobs, including surveys on the Niagara power canal, the Ottawa River and on Lake Ontario.

The lake-bed survey was to determine whether there was any silting-up of intake channels at Lakeview generating station, a giant steam plant now in its final stage, just west of Toronto. Boat skipper Tom Letang made run after run along the laser beam, accomplishing in three working days what might have taken weeks by conventional methods.

"We used two-way radio to find the beam in the first place," he said. "The ray from the laser is so narrow we lose it if the boat swings more than two feet in either direction." Mr. Letang wore a darkened visor to prevent the laser doing permanent damage to his eyes.

Accurate sightings were obtained by mounting the laser on a standard transit. The instrument will operate from either the normal supply or a 12-volt battery and was purchased for under \$1,000. Now Hydro engineers are speculating they may be able to use this new tool in other survey work, for instance in the installation of equipment in generating plants where tolerances of .001 of an inch are required.

As to the future, that's anybody's guess. Already the magic of coherent light has brought the hologram, a three-dimensional image that hangs in mid-air. One laser beam is used to illuminate the subject and bounce from it to a photographic plate. A second beam is split off from the first and bounced to the plate from a mirror. The two beams produce alternating black and white lines on the plate known as interference patterns. When a laser beam is passed through the developed plate, an image of the original object photographed will hover ghost-like some distance from the plate.

Questions once the jealously guarded preserve of science fiction writers arise.

Is the hologram the answer to a threedimensional and screenless television producing images in a corner of the living room that one can walk around or even walk through? It could be. Certainly, the hologram would be of inestimable value in engineering and microphotography for, unlike an ordinary photograph, you can actually see the back of a hologram.

Will the power-carrying potential of the laser enable it to replace the spider's web of costly and cumbersome transmission lines which now criss-cross the land-scape? One day, perhaps.

Of course, such far-out conjectures may never be realized. Or, considering the breathless expansion of laser technology, they might be just around the corner.



Manoeuvring a bulky coal vessel through the 326-foot descent of the Welland Canal is a tricky business at the best of times. But today's Seaway traffic is aided by an electronic cop with TV eyes.

watch out below

by Nalini Goel



blustery spring day, Captain John C. nan deftly manoeuvres his 730-foot carrying giant from Lake Erie through Velland Canal. His immediate destinatis Lake Ontario, 326 feet below. His ge? The biggest vessel in the St. rence Seaway bearing the largest age: 28,300 short tons of coal to be t.

for Captain Brennan, who's been ning the Great Lakes since 1936, the plexities of the Welland present little lem. In 1967 alone, he piloted his y launched Canadian Century through transits hulking a total load of 1.7 on tons of coal — all of it bound for rio Hydro generating stations.

very little stops us," he says. "I guess bility is nil, we have to stop. Or if vind's stronger than 35 miles an hour." a 30 mile an hour wind puffing on a day leaves him undaunted,

Canadian Century slips through Lake at a brisk 15 miles an hour, but at the and its speed eases. The legal speed through the eight-lock Welland is a m.p.h.

was when you could count on ding three or four days to get through anal. When the 1,200-mile St.

Lawrence Seaway opened in 1959, large ocean ships gained entry to the Great Lakes for the first time. They lost no time in entering inland trade but the rush, coupled with the later opening date for navigation due to ice in the St. Lawrence, resulted in too many ships arriving at the Welland Canal at the same time.

Ocean ships, unused to inland navigation, were stumped by the Welland's twists and turns, especially in the seven-mile stretch between Port Weller and Thorold.

Moreover, smaller boats were causing serious delays. Even by 1964 two-fifths of canal traffic consisted of canallers and 400 footers — each carrying just one-third of the tonnage of the 730 footers. One day captains and Seaway officials remember all too well was June 9, 1964.

The line-up on the two sides of the canal was 37 vessels long. And others kept arriving.

That was when the Seaway Authority realized a systems approach was needed.

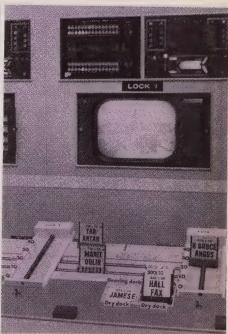
Following studies and outside consultations, an electronic control centre was installed. Last year saw the centre's first full year of operation, and delays to enter the canal were almost non-existent.

"Things really speeded up," says Captain Brennan. "I had only one long wait for 20 hours, mind you — but that was due to very strong wind, not traffic."

In the electronic control centre, the atmosphere is hushed. Five men work with clock-like co-ordination controlling the destiny of millions of tons, be it iron ore, grain or coal. A traffic superintendent, flanked by two sector despatchers, is the man to watch. Carefully scanning the 27-mile canal on closed-circuit tele-

by Harry Wilson





Passage through the Welland Canal is monitored lock by lock on closed-circuit TV. Top left, Captain John Brennan, skipper of the coal carrier Canadian Century, largest of the Seaway vessels.



vision, he can make split-second decis about positioning ships.

In front of him is a model of the canal complete with electrically operated loc and channels. Models of ships cruise along at a speed simulating actual trans The models are coded — yellow desce ing, blue ascending — and the ships' vital statistics are mounted atop each model.

As soon as a vessel arrives, the despatcher is alerted by radio telephone. places the model at the reported posit and radios instructions to the captain.

"Canadian Century?... This is Seaw Welland Radio. Captain, will you brinalong to the wall above lock 8 . . . Yo get the lock right after that salty clear upbound."

"Right, Seaway Welland. Canadian C tury, out."

And then the ship begins its descent.

Despatchers also control TV views of ships and use a bank of lighting device to time a ship's progress. Every boat's speed is measured against average tir s for each type of vessel. So a lagging vessel can be instantly spotted.

The centre's computer makes a stern! evaluation of lock performance and si mits a daily report to management or a behavior of the canal. A 24-hour aut matic camera gets into the act, too. I clicks away at the display model, and camera slides can be used to help evaluate performance.

When passing through the Welland, p tains must accept that "first come, fi served" courtesy won't always be of served. In poor weather, specially equipped ships are ushered through st When wind is predicted, the controll! must deny entry to wind-susceptible ships to prevent them from blocking .e

A half-hour time loss for one ship cal often mean a half-hour gain by 20 (er

Wind and fog conditions are fed to controller by the Seaway weatherm.

Intensive maintenance takes place each winter when the 36-year-old Welland is drained. Right: heavy equipment at work on the new by-pass canal.

also sends data to the Hamilton orological branch of the Department ansport. Hamilton wires back forethat help avoid weather interrup-

her member of the control crew proan information service for the ing companies. He keeps them ined about the progress of their ships.

new system using closed-circuit and telemetry has assured greater ency in monitoring vessels through anal and will prove invaluable in the demands of increased traffic," Dr. Pierre Camu, president of the St. ence Seaway Authority.

demands are dramatically increasing. 32, when the present Welland Canal opened, tonnage handled was 8.5 n. In 1967, tonnage was a whop-52 million. By 1980, it should rise to than 65 million.

ugh tonnage has increased six-fold 1932, the number of ships passing gh the canal is now decreasing. In the Welland's maiden ship — the cot Lemoyne — locked throughing 530 thousand bushels of grain, reated quite a sensation. Today, all of the Dominion Marine Association modern ships can transport in alle cargo over a million bushels of which is the entire yield of 80 emiles of prairie wheat.

ear just three ships — the Tarantau, oulin and Canadian Century — d 10 per cent of the total tonnage ag through the canal. But they made ive per cent of the transits.

ay authorities are doing all they can courage maximum-sized vessels. ear they started excavation for a million, 8.3-mile canal to by-pass and and improve navigation by ating all bridge crossings and diffiurves. As a result of improved water the 730-footers could add an extra nches of draft. This means they carry an additional 300 tons a trip, least 30,000 tons a year.

37, the Seaway Authority introduced year plan for lockage fees. Under an ships with cargo paid \$20 a lock



(\$160 for the eight-lock Welland) and half the price when in ballast. The price per lock will rise by \$20 a year so that by 1971 a loaded ship will pay \$100 a lock.

This added cost of Seaway travel will be felt by many regular customers, including Ontario Hydro. Ships bringing coal from Conneaut, Ohio, to Hydro's thermal-electric generating plants on Lake Ontario make more than 100 trips a year. Even if demand remains at present levels, a bruising \$300,000 will be tagged on to Hydro's coal transportation costs by 1971.

But Seaway officials say that even the new lockage fees will not produce enough revenue to cover operating costs of the Welland section. They claim the fees will improve efficiency by reducing the number of small vessels, and increasing the proportion of efficient maximum sized carriers like the Canadian Century. However, many people believe the Seaway should be toll-free to further international trade.

All this is none of Captain Brennan's business — his job is to get his huge ship swiftly and safely into Lake Ontario. By a remarkably efficient combination of man and machine, it takes just 13 hours.

Headaches for Hydro, too

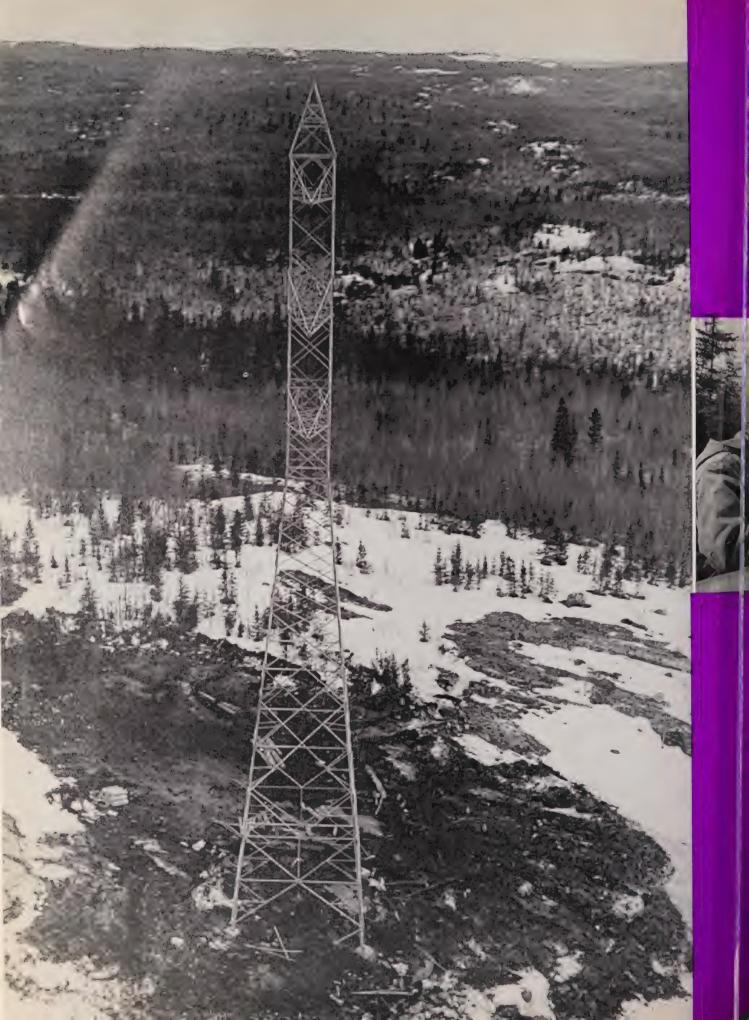
With the new Seaway channel slicing along the eastern boundary of Welland and isolating only a small wedge of land from the rest of the city, disruption of the community's life will be kept to a minimum. Even so, construction will bring its problems.

Welland Hydro manager Reg Turton says the Seaway Authority will buy and remove all electrical distribution equipment in the affected area, then sell reusable items back to the utility.

"In all, the equipment is worth about \$32,000," says Mr. Turton. "There's no sense buying it all back because changing technology has rendered some of it obsolete. Fortunately, this is not an area with a great load density. I suppose that's one reason why the Seaway could go ahead with this particular route."

First counts suggest that construction will affect about 60 of the utility's residential customers, many of whom are having to relocate. An alternative power supply will be found for two industrial plants, which will be isolated from the rest of the city by the new channel. Ontario Hydro services in the area will also be disrupted. Several major distribution lines at present cross the site of the new waterway. Welland Hydro will also use power line ducts to be incorporated in one of two tunnels being built under the canal.

The Seaway project comes at a time when Welland Hydro is facing the heaviest work load in its history. Highway widening, new lines, many street lighting programs and the construction of a new service centre are all on the books.



ing together two
ower systems calls
or more than a
nowledge of knots

nere e ast neets west

Rae Honkins



East is east — and west is west
— and ne'er the twain shall meet

- Rudyard Kipling.

The terrain varies between rugged and very rugged and the speckled trout range anywhere from two to four-and-a-half pounds. Curious moose and black bear — unafraid of either man or machine — take up vantage points only a few feet away to watch in almost reverent silence while the "big job" goes on.

This is the land where it's not uncommon for the January weather to change, almost overnight, from a chill 60 degrees below zero to a spring-like rain. This is the Ontario northland, and by 1970 Ontario Hydro's east-west tie-line will pierce arrow-like through 500 miles of what rates as some of the roughest landscape in North America.

From dawn till dusk, summer, winter, and even weekends, Hydro's northern construction forces, about 450-strong, battle waist-deep snow, rock, muck, and blackflies to push through the high-voltage line that will wed the east and west power networks. (The east system serves northeastern and southern Ontario and the west feeds the northwestern section of the province.)

The \$60 million project, stretching from Sudbury to the Lakehead, will form the pioneer link between the two grid systems and create a direct physical hook-up between electrical utilities from Saskatchewan to Quebec. Along three fronts, men and machine are assaulting the big game country — and an advance party is set to begin manoeuvres on yet another untamed stretch between Marathon and Nipigon.

The three sections under construction now include a 39-mile Algoma to Mississagi

River link, a section from the George W. Rayner generating station to Aubrey Falls generating station, which also measures 39 miles, and a 106-mile span from Wawa to Marathon.

Between Algoma and the Mississagi, the lay of the land is rugged. It's very rugged from Rayner to Aubrey Falls. So is it from Wawa to Marathon. And from Marathon to Nipigon it's very, very rugged.

The Rayner-Aubrey Falls loop plays a dual role. In addition to being a section of one of the most significant lines yet to be under-taken in Ontario Hydro history, it will feed construction power to the 130,000-kilowatt hydro-electric development at Aubrey Falls — one of the northland's leading tourist attractions.

Many unusual techniques of line construction are involved in the "big job." For example, to combat the widely varying terrain, everything from standard fourwheel drive pick-ups to gigantic articulated off-road vehicles — which snake their way through everything from muskeg to logging trails — have been pressed into service.

Even giant cranes loom above the spruce tops — where the going isn't too rough to get them in — to assist in tower assembly. But they're the exception, not the rule.

All towers are built on location from steel shipped in via giant Timber Jack vehicles from camp material yards. Most of them are erected using a gin-pole — or miniature elevator — with linemen, about four to a crew, bolting parts together, all the time working overhead from uncomfortable perches amid the criss-crossed steel.

And standing like sentinels, they march along four to a mile. In the vanguard, an army of slashers has brushed aside the

ower under construction lizes the desolate terrain of ig 10b." Above: next stage work is discussed at an conference deep in the rn Ontario bush

Worker helps take the strain as equipment is winched (centre) to the top of a transmission tower. Bottom photo shows linestringing in progress.







wilderness along some of the 500-mi route.

Some towers are buckled into rock, others into mud. But all of them have be exact. Should the footing be out be much as a single inch, the five to sev ton structures can't be erected.

The "big job" is a masterpiece of presion engineering. So much so, that extringing of conductor cable — about 3,000 miles of it in all — has taken on new look. The heavy wire is looped tower to tower using mechanical teners, pullers, and reel-winders, designand built especially for use on the eawest interconnection.

Supervisory personnel flit from camp camp — the camps dot the Wawa-to Marathon section at 10-mile interval and tower to tower in small helicopte while giant "choppers" provide a fer service for workers to otherwise inactible locations.

The few bush access roads leading t right-of-way, and most campsites, a nothing more than swirling rivers of punctuated by bad bends and deep holes.

However, there's some compensation the rugged men of the north in that camps were never like these. Before start of the "big job" they were all upcanvas. But the tents have given we modern mobile homes — the two-to room type, complete with TV and explication washer-dryer twins.

And the grub's "just great."

It was the men themselves who tag the east-west tie-line with its nicknithe "big job." For most of them also worked on the Extra High Voltage litthat runs from just south of James the Toronto area. Without trying to anything away from its forerunner, the claim the E-W hook-up makes "chi 3 play" of the EHV job.

"The terrain is rougher, the line is let it represents a pioneer link between and west, and there are no tailored measure towers delivered to the form here. Only the voltage is lower," the say. The east-west line will ultimate deliver power at 230,000 volts against the EHV line's 500,000 volts.

It could be that Rudyard Kipling ne f envisioned Ontario Hydro's unceas quest for more and more electric et g to meet the needs of this power-hulf province when he penned his imm a "Ballad of East and West."

Perhaps he did. For he also wrote : ...But there is neither east nor w when two strong men stand face t face ..."



Pioneering is getting to be a habit with Ontario Hydro linemen. Take the delicate business of working barehand on live power lines. Hydro scored a utility first by working "hot" 500,000-volt lines barehanded from insulated buckets.

Barehand operations save time and money. They also save inconvenience to customers, who might otherwise find themselves temporarily without power. The first barehand work took place in 1963. Since then, the technique has been expanded by a whole series of developments. Latest of these is the use of a plastic shield that will permit barehand work on sub-transmission lines in the 27,000 to 44,000-volt range.

Strangely enough, linemen were perfectly safe handling lines carrying much higher voltages. But they were barred from barehand work near sub-transmission poles because of the smaller insulators, which bring conductors uncomfortably close to the cross-arms of these wood-pole lines. Now they have a shield that snaps over the insulator skirts, maintaining a safe



distance between lineman and crossarm and preventing any accidental grounding that could prove fatal.

"There was nothing like this available and we had to develop the shields ourselves," says a line maintenance engineer. "Now at least one company is interested in manufacturing them if there is a significant market."

fust

Another live-line technique developed by Ontario Hydro is the re-tensioning of 230,000-volt cables still throbbing with power.

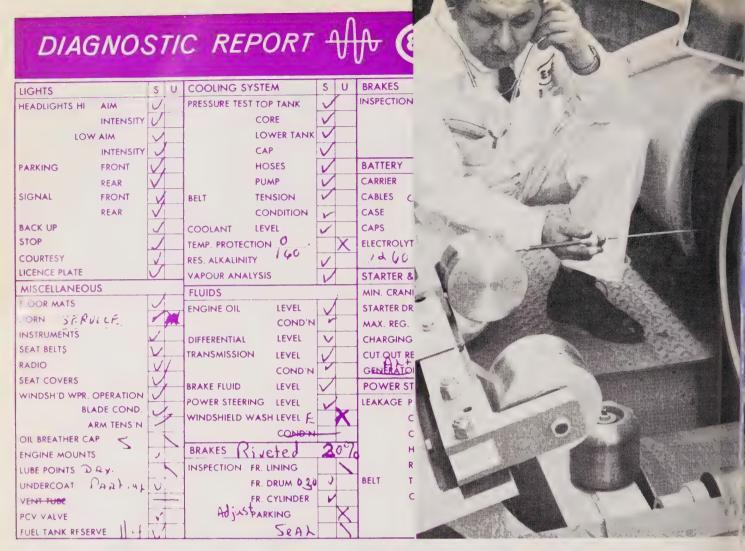
The idea was tried out on the 175-mile line between Chenaux Generating station on the Ottawa River and Toronto and enables the line to carry more power from new hydro-electric developments on the Madawaska River.

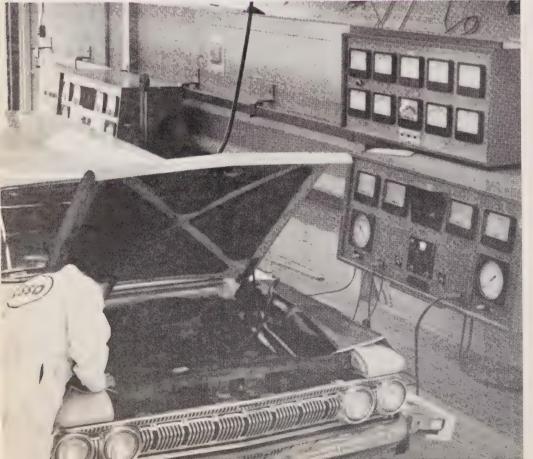
The more power fed into a transmission line, the hotter the line becomes. This causes the line to expand and therefore sag. Re-tensioning ensures adequate clearance above the ground.

Most of Ontario Hydro's older transmission lines were designed to operate at a maximum of 120 degrees Fahrenheit. But subsequent research has shown the temperature can be raised 50 degrees quite safely providing non-ferrous hardware is installed. To take up the slack, linemen winch in the line until it forms a huge loop, cut the loop away and splice the line. Men, winch and all other equipment are carefully isolated from the ground. Up to 22 miles of line have been tightened in one such operation. Apart



from anything else, the technique has saved the trouble and enormous expense of building a completely new transmission line. $\hfill\Box$





looking for trouble

"No Doc, you can't mean it Doc!"

That's about the reaction expecter a man takes his second love into and learns that the old girl isn't in the of health. It might be anything simple case of the wheezes to sor demanding major surgery.

And although the clinic abound white coats and stethoscopes, won't be found among the diagnos. There is, however, a wealth of CMs fied Mechanics) and plenty of exp in the group.

The centre has all the aura of a h p but it's the patient that makes 1 ference. In this case she has a few had

R CLINIC

Electronic Auto Analysis

		The State of the Contract of the State of th	and the state of t			
SU	REAR SUSPENSION	S U	EXHAUST SYSTEM	SU	AUTOMATIC TRANS. S U	LOWER CONTRACTOR
	SPRINGS	V	FRONT PIPE		SHIFT PATTERN	3 0
1	SHOCKS LEAKAG	EV	MUFFLER	1	DOWN SHIFT	PRIMARY WIRE CONDITION
V	LINKAG	V	CENTER PIPE	J	MANUAL SHIFT CLUTCH	PRIMARY VOLTAGE
	ACTION	L	RESONATOR		ACTION /	SPARK VOLTAGE REQ.13KV
1	FRONT SUSPENSION		REAR PIPE	7	FREE PLAY	MAX. COIL OUTPUT. 22KV
	SPRINGS	Y	BRACKETS		THROWOUT BEARING	
	BALL JOINTS LOWER		ENGINE OIL LEAKS		TIMING	DISTRIBUTOR CAP
V	UPPER		ROCKER COVER	TVI	INITIAL SPEC & ACT	ROTOR
/	SHAFT		LIFTER COVER		2000 RPM SPEET 36ACT 20	SPARK PLUG CONDITION H.V. WIRING CONDITION
	STABILIZER	1	MANIFOLD CENTER		IDLE RPM SPECSON ACT 450	POWER BALANCE
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under her bonnet and wide-oval

c in 1964, Imperial Oil introduced nics to the motoring world and they n instant success. Making extensive electronic gear, 200 separate checks inpleted during the 30-minute test. Esso inspection is divided into three to steps. The first includes a look at haust, muffler, universal joints, encounts, shock absorbers and suspensistems. Electrical contacts attached trall engine points probe the power checking the distributor, condenser,

ark plugs and generator.
is the heart of the clinic, a fourinertia test machine that duplicates
ghway and city driving conditions.
led by a dynamometer, the machine
normal operating loads to every
the car, from carburetor to trans-

all four wheels are involved, the ally is driven as much as five miles the dynamometer tests. Hill climbsing and heavy and light braking mined, with electronic impulses 3 the car's action.

wners get a bird's eye view of the

inspection from a raised lounge and can listen to a blow-by-blow description over a telephone. In addition, they can watch the results on a panel of slave gauges and dials, including an oscilloscope.

As one service centre manager puts it: "The dynamometer test is like driving up a hill at 60 mph with a mechanic sitting under the hood to check out the engine."

A third step involves a test of the air filter's efficiency and a visual going over.

When opened, the original clinic on Metro Toronto's Eglinton Avenue had one of three inertia machines in existence. The other two were owned by a US car manufacturer. Over 18,000 cars have passed through the centre since then and eight more centres have been established in major Canadian cities.

Other oil companies are getting into the electronic act. Shell Canada Limited has established a test centre at Vancouver and plans to open others at Montreal and London. Smaller clinics are springing up at the dealer level.

About the only difference between the electronic auto analysis and an electronic medical analysis is the price — a car physical is done for less than \$10.



documentar

by Sheila Kenyon

ow often have you stood in line to see a documentary movie? Until last year, most Canadians would have answered "never". But Expo was unique in North American motion picture history.

Sponsors of the films expected a moderate acceptance; the response was overwhelming. It became the "thing" to see certain productions. Even smaller pavilions — those that did not offer spectacular motion pictures — found audiences attentive and eager to watch their films.

Undoubtedly the impact was the result of a broad selection of new film techniques using multiple and large screens. For instance, the telephone pavilion offered Canadians a 360-degree portrayal of their nation so realistic that it was breathtaking.

In 22 minutes, "Canada '67" took visitors from coast to coast. Walt Disney did the final editing, but Canadians played a prominent part in its creation.

Robert Lawrence Productions, of Toronto, did the production and filming. According to Don Hall, of that company, it was probably the first time 35 mm film was used in the 360-degree Disney process. Production costs were in the multi-million dollar bracket, and final cost is still not

known. The screen for "Canada '67" 23 feet high and 275 feet in circumference. It was split into nine panels? served by nine different projectors.

Also of outstanding success was the Ontario pavilion presentation, "A Pla Stand". Created by Christopher Chart of Markham, this was a completely idea in film making. It took Mr. Cha over two years to film Ontario. Ther from a series of frame charts, he asso, the end product from 40 miles of fil

The result was a multi-screen varial picture projected through a single s 70 mm film. More than 6,000 peopl day saw the film during the Export was a special award winner at the annual Chicago International Film Festival, and only last month it recei Academy award.

🦰 trangely enough, Mr. Chapma 🌬 saw the finished film on a la screen until it opened at Exp A 16 mm version of the movie, offere of the public by the Ontario governme \$65, has been selling rapidly.

Now the government has announce the Mr. Chapman will produce a secon il

e Ontario pavilion at the World's n Japan in 1970. Mr. Chapman, who tly returned from Japan, describes www.film this way: "I have got to t Ontario for the Oriental mind."

challenge — but an exciting one.
Yen't a name for it yet," he says,
"Il be using a screen twice as large
Expo, and curved." The Expo screen
Ired 55 by 33 feet.

e industry, Expo was an unbridled ss. Although we live in an audioage, usually it's only the young who he opportunity to see its many ramins through modern educational expo proved that young and old are affected.

hile some countries have developed large, entertainment-type motion picture industries, a has had to concentrate on docu-y or industrial films. "In any book with the world's best motions, Canada has rarely had more than lote," says the Encyclopedia Canayet in the documentary field, this has achieved an international ion.

s close to the industry feel that the inment-type of motion picture in-

dustry must emerge. Both the United States and Britain have popularized their way of life and belief through buoyant motion picture industries. Building up a flourishing entertainment picture industry could present many problems, though.

ack Chisholm, one of Canada's pioneer movie makers, says it would need a master's touch to compete with the Hollywood and British studios. "In California, you have an ideal climate for all-year movie making. And where else can you hire performing seals or 3,000 Arab costumes?" But with a de-emphasis of Hollywood's role as the motion picture capital of the world and a growing awareness of the possibilities of film production in other areas, there is no reason why Canada should not develop a feature film industry.

Canada is by no means a newcomer to movie-making. The Massey Harris Company — now Massey-Ferguson, a multinational company and the largest producer of diesel engines and combines in the world — is attributed with sponsoring the first documentary film. It was made in 1896 and the subject was plowing.

Since the turn of the century, the company has continued to use films in all aspects of internal and external programs. This year, it is sponsoring a film on the Royal Winter Fair. A spokesman for Massey-Ferguson says it will fill a much wanted need by interpreting the fair to Canadians across the country.

Perhaps the most meaningful step forward for Canadian movie making was the formation of the National Film Board of Canada in 1939. It was formed to supervise government film production and distribution in Canada and abroad. Set up during the war, film circuits were established in rural and suburban areas; in factories and in schools.

Films are produced in both French and English and in other languages for foreign distribution. At the same time, films are also produced for both TV and commercial theatre showings. Along with the NFB, large Canadian companies make films on every conceivable subject.

ntario Hydro is among the few companies that maintain their own film unit. It has been in operation for 15 years and, apart from making films for public showing, the unit is also responsible for recording construction progress and making training films. Most major companies employ

private producers to make films about their industry or films for public service

Distribution of films to enable the public. students or groups to see them is as vital to movie making as is the actual production of the film. One of the largest company distribution systems is operated by the British American Oil Company. According to the company's film librarian. Miss Verna Adare, "the response is fantastic.'

Last year, for instance, Miss Adare estimates that 12,700 films were shown to about 698,500 viewers. Some films are so popular that the company provides more than one copy. Ninety per cent of the audiences are school children. B-A has five film libraries across Canada: Halifax, Montreal (English and French), Toronto, (algary and Vancouver.

Public libraries are active, too, in the distribution of films. Since the amalgamation of Toronto's library system, demand for film borrowing is increasing rapidly.

t is doubtful that the lift given to the Canadian film industry by Expo will pass, although movie making has never been inexpensive and multi-screen production is four to five times more costly. Recently, Westminster Films announced they have made a multi-screen movie, using three interlocked projectors, for Bell Telephone executives. But for the general public the opportunity to see new dimensional films will be rare. However, Expo may show re-runs of the Centennial year successes this summer.

As for amateur enthusiasts, Canada's magnificent scenery is theirs for the taking. For the public's greater awareness of the film industry's achievements is matched by a corresponding increase in the phenomenon of home movies.



Wide choice of Hydro films

Ontario Hydro offers a wide selection of films on the story of electricity in the province. They are available free of charge to schools, social clubs, professional societies, churches and business groups.

Most of them were produced by Hydro's own film unit, which also makes training films for internal use and records construction progress. Occasionally, t commission engages the services of a private movie-making company.

"Niagara Power," a 20-minute sound and color presentation by Westminster Films, is a case in point. The film was shown to the public for the fi time in March. It includes many shots of the falls and gorge, the miles of Niagara parks, the effects erosion and the remedial works program which ha

"Niagara Power" is Hydro's third film about the Niagara area. In the coming year it will be seen by more than 200,000 visitors to the Adam Beck generating stations at Queenston.

Among the many films in the Ontario Hydro librar is "The Years of Change," a review of the develop ment of electricity set against Ontario's history. "Still" pictures are used in this movie to give authenticity to historical scenes. Latest trends in power development are portrayed in "Nuclear Power" and "Three Sources of Power."

Just completed is "St. Lawrence Power," a film tracing the history of the river as a transportation route and source of power from the 18th century to the present day.

Not all Hydro's films are directly related to electri power. "The Power of Speech," for instance, is a 20-minute sound and color film dealing with pec ple's problems in communication. It tells the stor of a boy who, after experiencing these problems, able to gain confidence and poise to express his ideas.

Other popular movies include "The Story Behind the Switch," a safety film, "Play it Safe," an account of the development and construction of Hydro's 500,000-volt transmission line entitled "Super Highway of Power" and "The Greeks Has Word," the story of steam power. A catalogue listing these and other films is available from Ontario Hydro's Public Relations Division in Toronto.



er plunges

o swimming pools with underwater lighting will soon be to a new regulation making it mandatory to install an atic safety device. As of May 1, new pools were required to the equipment and by November 1 all pools with subd lighting must be so fitted.

device, called a ground fault protector, is mandatory under changes in the Ontario Electrical Code made by Ontario and sanctioned by a cross-section of the electrical in. The annual meeting of the OMEA in March passed a tion from Sarnia Hydro that approved of the changes.

small amount of current leakage occurs, the fault protector ff circuits instantaneously. Several makes are on the market ave been approved by the Canadian Standards Association. Elevice is equipped with a test button and must be checked day before the pool lighting is used.

Hydro office?

Hydro has plans for a new head office building on property at the corner of University Avenue and College in Toronto. Chairman George Gathercole said it will bly be a year before a definite decision is made regarding uction.

site was occupied by the former Royal Conservatory of building, which burned down on Christmas eve. If a new tree is built, the present 16-storey head office building next will be sold. Hydro's engineering building, immediately it on Murray and Orde streets, would be kept in service.

wheeled his wheelbarrow

you speak about old timers in Onelectrical utility business, few can figurative candle to Bill Stewart of Bay. His romance with electricity in 1906 when he travelled from his Renfrew to work for the North Bay ight and Power Co. And it didn't y end until December 31 of last



rugh he was called a lineman when ted, some rather odd duties were

d to him. Like wheeling barrows of coal into the old steaming station or pedalling around on a bicycle collecting ts.

io Hydro took over the private system in 1916, but Mr.

Stewart stayed on as wire chief and construction superintendent. When the city formed its own commission in 1941 he became superintendent of works.

There are few transmission lines, sub-stations, transformers or street lights in the area that weren't built by Bill Stewart's crews. One of the highlights of construction was in 1930 when a 25-mile transmission line from Crystal Falls to North Bay was built in 27 days. "We were pretty proud of that job," says Bill. "It was quite a feat back in those days with the equipment we had."

In 1945, Mr. Stewart was appointed manager of North Bay Hydro, a post he held until 1954 when he retired. But the retirement was short-lived, for he was quickly elected to the commission of West Ferris. Mr. Stewart served as commissioner and chairman until the end of 1967 when West Ferris and Widdifield were joined to North Bay.

Gifts for the president

Sixty-five officials representing business and Hydro across the province met last month at the Skyline Hotel in Brockville to honor J. R. Philips as new president of the Ontario Municipal Electric Association. During the president's dinner, Ontario Hydro Chairman George Gathercole (right) presented Mr. Philips with a gavel. AMEU president F. L. G. Askwith gave him a book of memory.

In presenting the gavel of office, Mr. Gathercole said it was an instrument to preserve silence and to ensure decorum at OMEA



To preserve the peace

meetings. "The OMEA has a great tradition of leaders in the Hydro family and they have made a great contribution to the province," he said.

Mr. Askwith, assistant chief engineer of Ottawa Hydro, said honor had been brought to Eastern Ontario with the election of Mr. Philips, who is a member of Brockville PUC, Henry Baldwin, of Oshawa, the OMEA'S 1st vice-president, and himself. He said the AMEU stood ready to assist Mr. Philips.

Among other speakers were Brockville Mayor J. G. Broome and T. A. Lindsay, president of Phillips Cables, Ltd., where Mr. Philips is vice-president of personnel.

First place for safety

Safety is becoming everybody's business. At least that's the experience of the Electrical Utilities Safety Association, which holds annual safety seminars.

"Attendance at the seminars has jumped 38 per cent over last year," says Harry Flack, EUSA manager. Held at points as far apart as Fort William and Smith's Falls, New Liskeard and Wind-



Pass me the chute

sor, the meetings drew representatives from utilities that have never before participated.

A recent meeting at the Skyline Hotel in Metro Toronto was pical of this enthusiastic response with 180 delegates turning up. The day was split into four parts, a member of the EUSA staff conducting each. Sessions were headlined "Why Back Injuries?", "What's New in Safety?", "Review of Resuscitation Methods" and "Belting in for Safety". Talks were augmented with slides and models as well as actual safety equipment.

In his talk, Jack Craig said that in 1965 as many workers as the combined populations of Whitby and Ajax suffered compensable back injuries. "We have ourselves to blame in a good many cases", he said. "We just don't get enough exercise. We're getting softer with all the modern machinery."

Mr. Craig said that in his travels he saw more women than men shovelling snow. The little woman did more physical labor than her husband, especially if he sat at a desk all day.

Moe Shepherd took the audience on a slide-illustrated trip around the province. Stops were made at utilities that have come up with their own safety devices. Among the more ingenious were built-in ground wires for line trucks, racks for storing post hole augers and saw and axe guards made out of scrap cable insulation. He also showed a prefabricated polyethylene shelter built by Sudbury Hydro. The arrangement permits splicing and other ground-level work in relative comfort despite 30-below temperatures.

He concluded by showing some of the newest additions to the list of safety gear. Included were dressy safety shoes, steel-toed rubber boots, dog repellent and improved adjustable climbing spurs.

Reviewing resuscitation, Gord Campbell told delegates that mouth-to-mouth isn't all that new. It was first employed about



Who's for tennis?

850 BC. He traced the history of resuscitation down throug years, noting some of the earlier methods which included be the person on the feet with a stout stick. This method work times, the pain of the beating bringing the victim back to sciousness.

Mr. Campbell said that the Schaefer-Prone method is the successful technique to date, especially in the case of el shock victims.

The final session covered the various types of belting th used in climbing. A film developed by EUSA illustrated the test program, which determines the type of belt to be us certain situations.

Looking over belting on display at the seminar are Mr. 6 herd, EUSA; Harry Bradley, Conrad Co. Ltd.; Don Walsh, Safety Association; John Hepburn, Port Hope Hydro and McLellan, York Hydro. In the other photo Bill Marshall York Hydro; Ed Ramsbottom, Milton Hydro; Jack Male, I coke Hydro and Bill Dukelow, EUSA, are examining a ne sulated guard for use while overhauling air brake switches

Former manager dies

V. A. McKillop, 69, former general manager of London PUC past president of the Association of Municipal Electrical Ut died recently in London. Well-known in utility circles acro province, he headed the AMEU in 1942.

Mr. McKillop, who was with the PUC for 40 years in v capacities and retired in 1964, was active in numerous orgitions. Among them were the Engineering Institute of Canawhich he was a former president, the American Water Association (Canadian section) and advisory board of the U sity of Western Ontario faculty of engineering.

When he retired, London's Riverside Park was renamed honor. Mr. McKillop didn't completely retire after he left the — he spent two years as executive director of the Water Sewage Authority in Trinidad. He was born in West Lorr attended school there before going to the University of Toto study electrical engineering.

municipal briefs

Toronto Hydro has turned out an impressive 14-page bill promoting all-electric apartment living. The insert tells of the kilowatt environment and includes photographs of electric developments in the city.

Like the three musketeers, Galt, Preston and Hespeler consions have pledged their co-operation to one another. Calliboundaries between the municipalities artificial, J. A. Most Galt, chairman of a joint meeting, said that in view of the on regional government, closer relationships were needed starter, the three utilities will consult each other before embody and program that could conceivably affect a neighbor commission. Joint purchasing is being considered. A specific program will be held in September.

Oakville PUC has plucked a plum. Roy Cross, newly apt of marketing manager, told the commission that an order to plant a 158-home subdivision with all-electric service has been suffered announcement, noted that another 300 homes are to be near the Deer Park subdivision.

Offices at St. Thomas are being vacated by Ontario Hyc

still be the home of a utility after Hydro consolidates area ons in Aylmer. St. Thomas PUC is negotiating the purchase office and yard on Burwell Road as an addition to its t property.

or Utilities Commission now has a director of finance. He's ir-old W. C. Noakes, of Port Credit, a certified general actual who has worked for Ontario Hydro for 16 years. The mer will report to J. F. Cook, assistant general manager

cretary-treasurer, who retires in 1969.

d H. Scott, a president of the AMEU during its early years tired general manager of Belleville Utilities Commission, cently. He had been retired seven years. After education at tive Oshawa and McGill University, he worked in the States until 1913 when he moved to Belleville as manager ocal Electric Power Company. Mr. Scott remained in that in when the utility was purchased by Ontario Hydro. In when the municipality bought the system, he became ry-manager. His title was changed to general manager cretary in 1937 when gas and water utilities were merged e electrical system. Mr. Scott was president of the AMEU and 1920. In 1951 he was made an honorary member of ociation.

E. Croft has moved up to the post of chief engineer of auga Hydro from that of distribution engineer. He has with the utility for two years. Mr. Croft held various position the Belfast Corporation Electricity Department before to Canada in 1953.

ve years of service with Toronto Hydro have come to an J. F. (Frank) Thomlinson, who has been director of the ners Service Division since 1961. Born in London, Enge came to Canada as a boy and attended schools in a graduating from the University of Toronto with a degree trical engineering. Mr. Thomlinson worked for English for one year before joining Toronto Hydro in 1923 as a engineer in the power sales department. During his career, seen the system load grow from 150,000 kilowatts to 825,000 kilowatts with the number of customers alsoubling.

Service Division. Mr. Lowry was born and educated in Service Division. Mr. Lowry was born and educated in D. He received a B.Sc. in electrical engineering from the city of Toronto and also holds an MA in business adminismr. Lowry joined Toronto Hydro in 1949 as an engineer ates section of the department he now heads. Later he was saistant manager in the power service department, and was appointed assistant director of Consumers Service. In to London PUC through the ward system wouldn't be at That's the consensus of members of the commission into out that the electrical and water systems are city-wide. Cussion was fostered by remarks of John White, MPP don South, before the Legislature's Private Bills Commitsaid he would like to see the PUC elected on the ward

that PUC members be elected at large.

recipients of the Centennial Medal that have come to ention are Samuel Ashton, commissioner, Port Arthur eorge Barker, superintendent, Bancroft PUC; Miss Islay, secretary-treasurer, Cannington Hydro, and Harold commissioner and secretary, Cayuga Hydro.

to "give some chance of getting younger members". At e of an annexation in 1961, the Ontario Municipal Board

hots

n it's doubtful that any member of a group like the Federation of Anglers and Hunters would ever use Isulators or cables for target practice, it doesn't hurt to



Pothunters beware

reinforce the "don't" of it. That was the theory behind a display by Hydro at a convention of the group at Etobicoke's Skyline Hotel.

Examining damaged insulators are Rene Brunelle, Minister of Lands and Forests, and R. J. Boyer, Ontario Hydro vice-chairman. Posters aimed at both children and adults form the backdrop.

For posterity

A nuclear-energy museum is being planned at Chalk River. It will contain interesting items connected with the development of atomic energy in Canada. Exhibits are now being collected and stored until they can be moved to a permanent location.

Displays being considered include one showing the development of fuel for reactors, the development work leading to the production of electrical energy from nuclear power and one on the use of radioactive isotopes for commercial, agricultural and medical purposes. Frequent changes will be made in the museum's contents.

And no caviar

Who says there aren't any big fish left in the Trent River? Mind you, it takes pretty elaborate gear like the trash racks at Sidney Generating Station to hook them. Handyman J. E. Price, right, turned up this 50-pound beauty while cleaning the racks last month. The sturgeon, which measured 57 inches, was too heavy for him to raise and he had to call on J. C. McKenna for help.

The big fish had been dead for several days. Apparently it used to feed in front of the racks because there were several reports of



Say cheese

a huge sturgeon near the station last summer. Red circles, the mark of a lamprey, were found on the underbelly of the fish. Sturgeon have a thick tough skin rather than scales and the belly is the only area vulnerable to lamprey.

Tube tour



An inside look

Ontario Hydro and Galt PUC officials got an inside look at heat exchangers during a tour of the Galt works of Babcock & Wilcox Canada Ltd. The company is building 48 of the exchangers for Hydro's Pickering nuclear generating station, east of Toronto.

The visiting group included George Gathercole, chairman, Ontario Hydro; Mahlon Fisher, chairman, Galt PUC, and David N. Durward, manager, Galt PUC. The tour was conducted by Babcock & Wilcox Chairman R. M. Robertson. Getting a closer look at a workman inserting tubes in one of the exchangers, which transfer reactor heat from heavy water to regular water, are Mr. Robertson and Mr. Gathercole.

The dating game

Customers of Consolidated Edison in New York now have a good chance of keeping a date with meter readers. Recently, the company began showing the date of the next scheduled reading on customers' bills.

The policy was adopted because checkers frequently could not gain access to meters. In such cases, the bill was estimated. Another alternative was to supply the customers with do-it-yourself dial cards for mailing back.

But, says Con Ed, professional meter readers are better than amateurs and the company also likes a chance to inspect the metering equipment.

Kilowatts on wheels

To get first-hand experience in operating electric cars, Pennsylvania Power & Light Co. has bought a fleet of eight electric vehicles. The cars have a top speed of 60 mph and an operating range of 120 miles. They will be used for customer contact work.

The Mars II models have a built-in charger which peps up the batteries overnight from a 220-volt outlet. In addition, a high-capacity alternator partially recharges the cells when the car is coasting. Outlets have been installed at various work locations for re-charging. The company also plans to purchase a fleet of electric trucks.

Commenting on the vehicle order, company president Jack K. Busby said: "The electric car is unquestionably the car of the future for urban and suburban living and we're playing a pioneering role in developing another use for electric energy."

New regional manager

T. Edward Flinn has been appointed manager of Ontario Hydro's Northeastern Region with headquarters in North Bay. He succeeds A. B. Hayman, who will retire on July 1 after 38 years of service.





er 38 T.E.Flinn

A. B. Hayman

Born in Toronto and a graduate of the University of Torol electrical engineering, Mr. Flinn has been with Hydro for 29 He brings a wide range of experience to his new job. Before to North Bay in 1964 as operations engineer, he spent 15 ye Belleville. During that time he was operating superintenden maintenance superintendent and operations engineer for Hyformer East Central Region.

From Nova Scotia, Mr. Hayman obtained his B.Sc. degree Dalhousie University and B.Sc. in electrical engineering from Nova Scotia Technical College. He joined Hydro in 1930 worked in Toronto as municipal service engineer before m to North Bay. When Northeastern Region was formed in 19 was made consumer service superintendent and a year later sumer service and sales engineer. He assumed his present in 1964.

Bright as a button

Bell Telephone laboratories in New Jersey have done it | Scientists there have come up with a revolutionary light based on the technology that produced the transistor.

Called a solid state lamp, the device will first be us illuminate the plastic buttons on touch-tone telephone dialits inventors foresee it evolving into a new kind of color teles screen that could be made as small as a 50-cent piece. Scipsay it promises to revolutionize all kinds of display system require illumination, from computers to traffic signals.

The solid state lamp has no bulb and requires no more election it takes to operate a telephone circuit. It requires on thousandth of a watt. Actually, the lamps are tiny diodes megallium phosphide crystals. Whereas the transistor gives of as excess energy, the lamp gives off a bright ruby light.

March energy production

Primary energy provided by Ontario Hydro in Mark totalled 4.83 billion kilowatt-hours, an increase of 7 per cent over the same month a year ago.

For the first 3 months of 1968, the total is 14.80 billic kilowatt-hours, up 10.4 per cent over the same peril last year. Adjusted for seasonal influences, primate energy demand in March was 4.51 billion kilowathours, 2.0 per cent less than the previous month.

The seasonally adjusted total for March represer 54.23 billion kilowatt-hours at annual rates. This 388.79 per cent of the energy demand in 1949.



ne was when a sojourn in the bush on a pring job or a remote Hydro project was kind of a hair shirt proposition akin to g the Foreign Legion or signing up for a n the salt mines of Siberia. It was a good to save money providing one was prepared on the his recreation to a rousing game of the ge and his sex life to a dog-eared copy of the from which the good pictures had long been removed. But times change.

when we briefed staff writer Rae Hoprior to his recent safari into the wilds north Soo for a story on the east-west tieline, to pass on advice garnered during similar sions conducted on Hydro's behalf in the when dog teams were the "in" thing on line and many of the wigwams north of South were still below Gold Medallion standards, st forth a few pearls.

number one on our "must" list for intrepiders bound for the hinterland of our fair ce was a union suit.

ymond, my boy," we unctioned, "pack in d heavy set of long underwear whatever ou must leave behind. And speaking of ls," we went on, "select a suit with a genback hatch to expedite action under adconditions."

er paraphernalia suggested as being essenthe basis of our extensive woodsy lore ed the inevitable compass, a cheap fishing including a dime's worth of hooks, toilet (on the assumption that northern leaves still be relatively undeveloped) and a f playing cards to while away long evenings smoky light of a coal oil lantern.

as with a sense of satisfaction that we ad Rae depart — looking very much as mund Hillery must have looked as he if irm Britannia's flag on Mount Everest's summit.

I thank us for this", we chortled, and he

naged to trade in the fishhooks and comr a pink shirt with tab collar," he told us eturn, "and one of the local hippies gave bucks for my union suit — he figures to back-to-front and attend the next wings a kangaroo. Man, that north country wings."

we said, times change. Oh, the rock and

the muskeg and the black flies are still there and the work's still tough, but the after-hours activities are something else. Television's old hat on at least one section of the big job where the boys much prefer to daub the old toupee with Top Brass after a day in the wilds and head for Wawa.

Raymond went along. Prepared for a small town-type orgy of pinball machines and a bash of pool topped off with a double Pepsie, he was caught with his flaps down and spent an itchy evening in a somewhat more sophisticated environment.

Pink ladies and whisky sours were the order of the day and these were sipped to the accompaniment of some spectacular bumps and grinds performed by a belly dancer with few inhibitions and a costume to match. Orchestral offerings ranged from "Love In My Tummy" to "Tea For Two."

And that's why young Raymond sold his union suit. He recounts other interesting aspects of the east-west tieline project elsewhere in this issue.

■ Speaking of highballs (pink ladies, remember?), we had a letter last week from a Mr. Small in the Stations Design Department commiserating with us for being on the short-lived end of the alphabet. Faithful readers will recall the claim of a British doctor mentioned in our April column to the effect that people with last names commencing from S to Z enjoyed about the same chance for longevity as a fat man with a snow shovel.

In any event, his letter ended on this cheerful note:

"Having dinner guests Saturday evening, we made the usual before dinner offer and the lady guest specified that her rye be diluted with hot water. We never question our guests' tastes . . . they know what they want . . . but it was amusing to the company when the concoction, in consideration of the source of the mix, was quickly dubbed "The Cascade 40".

Most appropriate — and God bless the dear lady for having the strength of her eccentricities. We'll wager the Cascade 40 works fast and never produces the hangovers some of us associate with the more effervescent Gulf Stream Special.

Our correspondent in the Northeastern Region, stout lad, brings our attention to a Reuters item regarding an Italian who wired his wife for love.

"I could not bear to see her fast asleep," he told police, "while I was longing to make love."

And so, with true Latin ardor and logic, this chap sent a 220-volt charge of electricity surging through the bedsprings in the hope of inspiring his partner to greater heights.

He now awaits trial on a charge of causing grievous bodily harm and in our opinion deserves no sympathy. Any unqualified person who would wire a bed for 220 volts without adequate grounding and circuit protection, and without obtaining the stamp of approval of the electrical authorities, is guilty of gross neglect irrespective of the soundness of his wife's sleeping habits.

This is not to suggest that the basic thinking is entirely without merit. With the use of lower voltages, insulated bedsprings and CSA approved "his" and "her" controls, the device might find a market. From the utility point of view, it

would add diversity to the system and help increase load in the wee small hours when demand for power is the lowest. And since the average per capita use of electricity in Ontario is in the neighborhood of 8,000 kilowatt-hours per annum, any stimulating effect the apparatus might have on the birthrate would be money in the utility bank.

It's funny how the passage of time has a way of putting things in their proper perspective. We found a case in point in a regional press release put out by Hydro. In it, a former reeve of Streetsville, who had been instrumental in bringing initial power to the village from a miniscule generating station on the Credit River, is said to have once observed: "Streetsville was producing power for its citizens while Adam Beck was playing with his rig in the fence corner."

Surely, that's a bit hard on Sir Adam. The "rig" he was playing with was the electrical "circus" which proved so successful in acquainting rural folk with the benefits of electricity. His efforts on behalf of the public power concept were largely responsible for bringing cheap electric power to every corner of the province.

■ And the first squirts have already been fired in an undeclared war which threatens to spread across the country as meter readers, postmen and other unfortunates whose duties involve doorto-door contact with the public take up arms against a common foe — the over-zealous watchdog and his underdeveloped master.

Except for the rare "man bites dog" incident — a retaliatory technique limited in effectiveness by the length of tooth and general shape of the human snout — these poor fellows have had to rely on their persuasive abilities to sooth the savage beast. As a paperboy in the days when the news was chiselled out on stone tablets, we can personally attest to the futility of nicedoggying a charging doberman.

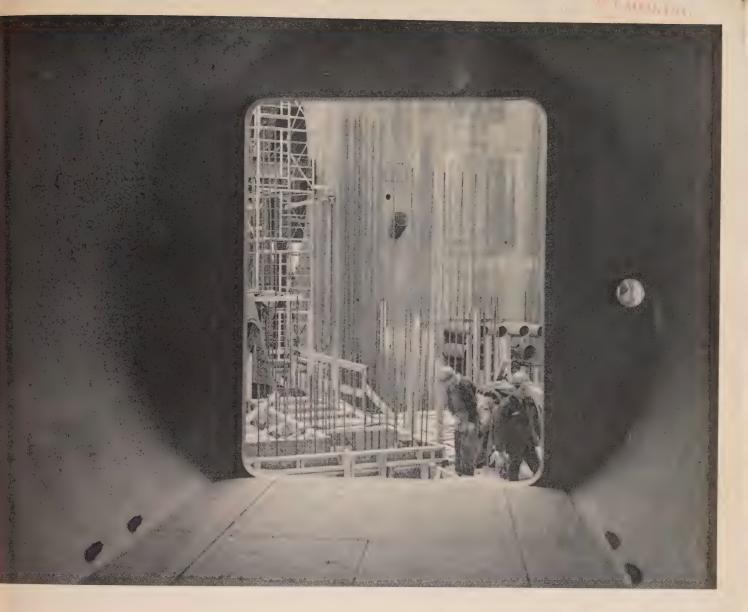
But the two sides were brought into some semblance of equality with the advent of the aerosol can. Canada's Postal Department has endorsed the use of dog repellent spray by its mail carriers and at least some meter readers are sallying forth fully armed.

Early squirting in the vicinity of Windsor suggests the kind of twist the war could take if allowed to go unchecked. One particular incident did little to clarify the legal aspects of dog spraying but did establish that meter reader dousing is a criminal offence. An irate dog owner was recently convicted for disarming a meter reader in the performance of his duties and shooting him with his own spray gun. The meter reader had previously let fly at the dog in a move which he considered to be one of self preservation.

Commenting on the over-all conduct of the war, a Humane Society official allowed as how a person on legitimate business had a right to protect himself against an attacking dog. But he cautioned that the basic ingredient of most spray bombs (oleo resin), if used excessively, could raise blisters under the skin of an animal.

Whether or not such blisters were likely to cause more discomfort than a gaping hole torn in the nether regions of a meter reader by a powerful set of canine ivories, he declined to say.





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ontario hydro news

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Along hydro lines 22

the cover

However you look at it, the nuclear power station now under construction at Pickering, east of Toronto, ranks among the world's largest. Its four giant units will be powered by a reactor that is entirely Canadian in design. It is custom-made for Canada's vast uranium deposits and to meet the needs of this expanding nation. The philosophy behind the CANDU reactor is explained in this issue.

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Want to talk business? Then hop right in, juggle the controls escape the telephone, irate customers, insistent salesmen . . . the we darned rat race. Yes sir. From now on, furtive deals negotiated in corners are strictly passé. Show him you're above it all. Tell him you'll pardon a further pun — that business is booming. Above keep him at arm's length until you touch down for that final handsh (The above conversations were recorded at a \$2 million displayed utility equipment staged at Barrie last month by the Association Municipal Electrical Utilities. For the story, see page 12.)



the thing is, says writer Norman Panzica, it's flexible. Add a bit here, take away a bit there. It'll still work.

candu:

reactor
with the
two-way
stretch

Six years ago this month, in the control room of a small generating station on the Ottawa River, the new pioneers traded smiles as their nuclear-powered plant fed a 20,000-kilowatt trickle into Ontario Hydro's grid.

The Nuclear Power Demonstration installation near Rolphton was at full power, marking the culmination of a decade of study by Hydro, Canadian General Electric and Atomic Energy of Canada Limited.

CANDU, they called the system — for Canadian Deuterium Uranium. The use of deuterium oxide, or heavy water, allowed the reactor to be fuelled with natural uranium, a substance both cheap and plentiful in Ontario. But today, with a 200,000-kilowatt full-scale nuclear plant operating at Douglas Point on Lake Huron and a 2,200,000-kilowatt plant under construction at Pickering on Lake Ontario, some people wonder whether CANDU, will do.

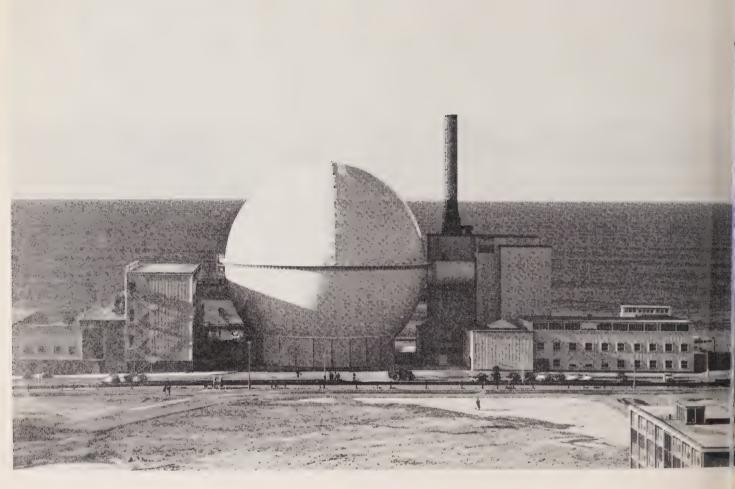
What, they ask, about the American light-water reactors? What of the UK's graphite system? Shouldn't Canada have waited for somebody to build and operate the ideal nuclear-electric plant? Were not Canada and Ontario Hydro gambling on a stubborn go-it-alone course?

"The first thing to realize," says Lorne McConnell, Hydro's nuclear operations engineer, "is that what constitutes the best reactor system depends on where you live."

True, the United States has operating or has committed 10 times as much nuclear-electric generation as Canada. The United Kingdom has more nuclear power in operation than any other country. And the population of each is also much greater than Canada's.

More significant than population differences, however, is one simple fact — by

Three countries, three distinctive reactor systems. From left are the experimental fast-breeder reactor at Dounreay in Scotland, the Pickering project near Toronto and the Beloyarsk nuclear power station in the Urals, USSR.



far the greatest use of each reactor system is inside the country that developed it. This isn't stubborn chauvinism; it's sound economics.

Whether nuclear power is competitive depends on such factors as the size and nature of the utility, availability of various fuels, the cost of money, wage rates, load characteristics and a host of other factors. A utility may, for example, be too small for a costly-to-build nuclear unit of economic

Despite teething problems and a variety of concepts, the future of nuclear power is assured. As of February, the US had a total nuclear-electric operating capacity of 2.9 million kilowatts, with 53 million more committed or under construction. Britain's total in service was 4.02 million kilowatts at the end of 1967, and at least 10.4 million more committed or under construction.

Canada's 220,000 kilowatts in operation is made up of NPD and Douglas Point; its

2.45 million more committed or under construction means Pickering at 2.2 million and Hydro-Quebec's 250,000-kilowatt Gentilly station.

Mr. McConnell estimates that by 1980 Hydro's nuclear capacity could be about nine million kilowatts. A recent Canadian Nuclear Association forecast suggests that 85 to 90 per cent of Canada's nuclear-electric generation in 1980 will be in Ontario.

Easily the outstanding characteristic of the CANDU system is its remarkable flexibility. It uses a reactor fuelled by natural uranium and employing heavy water both as a moderator and to carry heat from hot fuel to the boilers.

It's highly significant that this heavy water, runs through pressure tubes instead of a pressure vessel or through the reactor. In

the event of a ruptured tube, for instronly that tube need be replaced, not entire concrete-encased reactor. The also contained in these horizontal tucan be shifted around from tube to the in the reactor by remote control to graximum power output. This flexibility allows two or three different types of to be used at once for experimental poses. You can use enriched fuel, not uranium fuel, artificially produced fullike plutonium or a combination of elements.

Flexibility . . . You can add fuel while the reactor's running full blast; hoold it up to some other heat-transport medium; go from pressurized heat-transport to boiling; send steam either double the turbine or through a heat-exchalate boiler. All these changes, and other had be made without tearing down the and starting all over.





horizon is a development called a seder reactor. A radioactive golden it produces as much fuel as it uses, an more. But it will be at least 10 afore a fast-breeder is economical ver production.

preeders don't work out, the composition of CANDU in the world even better than it is now. If they spent fuel from CANDU plants will eady and widespread market to the breeders. Already Britain has some spent NPD fuel on a trial

full-scale CANDU plant is at Point on the eastern shore of Lake t is owned by AECL and operated rio Hydro. A key issue about the hich produced first power about hs ago, involves the scheduling of

construction — that is, the overlapping of one "generation" of plant with another.

By the end of 1960, before NPD's reactor started up, much of the design work on Douglas Point had been completed. All basic decisions had been made. Thus, a few of the early teething problems at NPD were duplicated at Douglas Point — but the engineers were ready for them.

"Some came as no surprise and we were well prepared," says Mr. McConnell.
"Others were averted entirely. We didn't wait for perfection in hydro-electric plants, or coal-fired stations, or automobiles.
There is no reason to do so with nuclear-electric generation. Had we pursued such a course, it is only a slight exaggeration to say that the entire US would have been nuclear before we got our first kilowatt."

NPD has a remarkable record of production reliability and safety. Every year this demonstration plant has consistently met

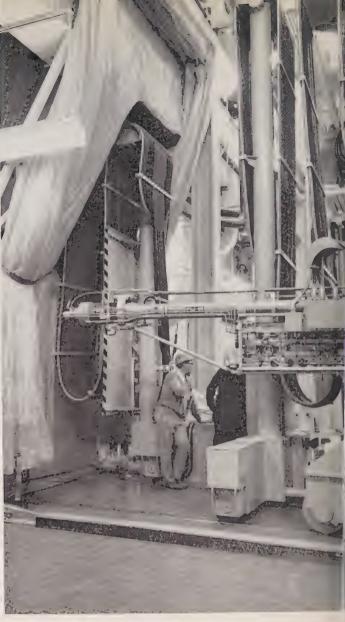
or exceeded its annual winter peak target. "Douglas Point will do as well as NPD," Mr. McConnell asserts. "Of all its problems, none is major in the sense of requiring large design modifications — and none is a nuclear problem as such."

During 1967, Douglas Point was out of service nine months, based essentially on two problems: in one case, a locking device caused a regulating mechanism to rub against a pressure tube, wearing a hole in it. Replacing the tube took two months.

The main pumps that move the heat-transporting heavy water also caused a two-month shut-down. Modification and improvement of all pumps took a further five months.

Mr. McConnell's prediction of Douglas Point's success already has support from





actual experience. By the start of last season's winter peak period, commissioning had demonstrated the plant could operate reliably at 75 per cent of its total capacity. Commissioning tests were suspended for the period and the plant's availability was nearly 90 per cent. Since then, commissioning tests have resumed and it has run at full power. Commissioning will be completed this year.

Douglas Point has already made major developmental contributions. It proved that capital costs can be predicted with accuracy. It also proved out the simplifications suggested by NPD (further streamlining is being introduced into Pickering's four 500,000-kilowatt units).

Not only the economies of scale and of advanced technology, but many other factors identify the CANDU system as the form of generation with the greatest potential for significant cost reductions — to a point where it may even be competitive with certain hydro-electric sites. Rising uranium prices will have less effect on the cost of power than similar increases in the price of coal. The cost of heavy water — now about \$21 a pound — is certain to drop to \$16 or so once Canadian production starts.

As to the future, Hydro has already committed \$300,000 toward the development of 750,000-kilowatt units, promising greater economies of scale. Whether, like existing plants, they will use heavy water both in the reactor (to allow the use of natural uranium) and for heat-transport, isn't yet known.

But here, the flexibility of CANDU shines. A new fuel cycle, a new method of heat-transport, a new fuelling design — all these can be incorporated even after the plant is in service.

Later this month, NPD enters a new pioneering phase. It will be shut do and its heat-transport system changes from pressurized non-boiling heavy to a boiling heavy water mode. It's this will lower either fuel or capital perhaps both — by operating at pressure.

"Should the boiling mode be prefedence says Mr. McConnell, "we can got at in the future, but not in time for the interpretation of t

Elaborate health protection devices and intricate fuelling equipment are features of the Douglas Point nuclear station, on Lake Huron. Below, an aerial view of the Pickering site.



oms and crime

ence of the extreme versatility of the ear age was presented at this month's meeting in Toronto of the Canadian ear Association and the American ear Society.

ok the Commonwealth's largest hotel e Royal York — to accommodate the delegates from several countries. The 500-odd technical papers dealt everything from the latest develops in nuclear power to the role of the in crime detection. There was even chibition of atomic art.

dian nuclear experts, including a g contingent from Ontario Hydro, dised the progress of this country's nuclear power program. Subjects ranged from "Nuclear station waste heat can extend the St. Lawrence Seaway system" to "The impact of nuclear power on system planning."

Two Toronto scientists, Dr. R. E. Jervis and Dr. A. K. Perkons, spoke on the latest addition to the police arsenal — a branch of radio chemistry called activation analysis. The technique enables investigators to tell, for instance, whether two samples of heroin came from the same batch. It can positively identify paint from a car or determine the distance from which a gun was fired.

Delegates also heard the preliminary results of Project Gasbuggy. This experiment took the form of a 26-kiloton nuclear device detonated more than 4,000 feet underground near Farmington, New Mexico, last December. It will determine whether the fracturing of a large volume of gas-bearing rock by an underground

nuclear explosion will increase the flow of natural gas. A seven-fold increase in production has been predicted.

The art show, entitled AtomArt '68, was the first Canadian exhibition of paintings by amateur artists working for organizations in the nuclear field.

Among the list of distinguished speakers at the conference were ANS president Dr. R. E. Schreiber, who worked on the first atom bomb, University of Toronto Chancellor Dr. O. M. Solandt, and Dr. Alvin M. Weinberg, director of the U.S. government laboratories at Oak Ridge, Tennessee.



Ontario Hydro Chairman George Gathercole accepts the gold ribbon-cutting scissors from Commissioner Don Hamilton and Mayor Clarence Davis.



utility takes in tenants until it needs the space

What better way to celebrate a silver anniversary than to open a new building? That's just what Aurora Hydro did recently and gained 10 times more space into the bargain.

In planning the Mosley Street building, the Aurora utility looked well into the future. It's estimated that the \$110,000 project will serve a population of 50,000 about five times the town's present head

The neat two-storey brick and block structure is a mixture of old and new. The contractor turned the utility's old onestorey building into a spacious lobby and display area. On the main floor of the new section is a large open general office, two private offices, a sound-proof billing room, a board room for commission meetings and a meter room. There are garages at the back.

Although the second floor isn't needed yet, it won't collect cobwebs - the commission has turned it into three spacious apartments.

"We don't need the space for at least five years," says chairman Don Glass. "So in the meantime, the apartments are making money for us."

An entrance in the centre of the new section leads to the apartments as well as the general office and board room. The office is arranged so that customers can come in either this or the original entrance to pay their accounts. When the apartments become offices, only minor changes will be made to the new lobby.

The basement, besides giving ample storage space, contains a lounge for women employees, washrooms and a lunchroom along with heating and air-conditioning equipment.

Both heating and cooling are electric. A heat pump extracts heat from the outside air down to four degrees below zero to keep the main office warm. In extreme cold, an in-duct electric heating unit takes over. In summer the heat pump works in reverse, dispelling warm indoor air and returning cool air. Baseboard convector heaters have been used in other parts of the building.

Before the opening ceremonies, Aurora Hydro hosted a dinner for members of the three levels of government along with Ontario Hydro personnel and officials of





neighboring utilities. The group ther to the new building for the ribbon performed by Ontario Hydro Cli George Gathercole.

In his speech, Mr. Gathercole s.] the average yearly cost of electric a residential customer in the tov \$84.38. "That's only 23 cents a day than the price of a quart of milk if h use a comparison with a staple with which Don Glass is especial miliar." (Mr. Glass is vice-preside large local dairy.)

The Aurora commission was for 1943. Before that, the town was : by Ontario Hydro. Twenty-five yea ever, is just a drop in the bucket of m the community, which celebrated s 100 years as a municipality in 196 N settlers, encouraged by the built Yonge Street, first went there in the But an Indian village of undetermited was unearthed on the eastern 19 town in the 1860s.

Aurora is the home of Canada o military regiment, the Queen's York |n It is an amalgamation of two IS groups, one tracing from Rogers are formed in the U.S. in 1756, the ot the York Volunteers formed in 188 Rangers were with Wolfe in 1759 16





red Quebec and were headed by Graves Simcoe, the province's first nant-governor, during the American lution. The unit has taken part in ry actions ever since.

rora, then known as Machell's Corwas in the centre of rebel country 337 when William Lyon Mackenzie 16d down Yonge Street in his ill-fated 16d pt to take York. It was an Aurora 16d n. James Mosley, who first warned 16d e attack on Toronto. On the other 16d Charles Doan, a local businessman 16d nested 16d ne

the village was the destination of st train in Upper Canada. That was in and it ran from Toronto North.

ile the name Aurora (coming from the an goddess of the dawn) would probe regarded as corny in today's sophisd society, it was prophetic. For with the dawning of a new era — that justry. The settlement took the name muary 1, 1854. It was simply picked

by Charles Doan, who had operated the post office for eight years in what had become Whitchurch.

The industry that made Aurora was the Fleury plow works, founded in 1859. It was so important to the 700-strong village that in 1863 the town fathers, in choosing a crest, put the rising sun on the top half and a Fleury plow on the bottom. Fleury operated for 80 years before merging with an Elora company and going out of business. At its peak, 200 men were employed there and many residents today can trace their family back to the time when father came to Aurora to work in the foundry.

In the intervening years, other industries came and today the town has almost double the industry of the other two large centres in the north of York County — Richmond Hill and Newmarket. Products emanating from the town include everything from aspirin pills to beekeepers' supplies, electrical controls, footwear and fine leathers.

At present, Aurora Hydro employs 10 people to meet the demands of 3,000 industrial, residential and commercial customers. Last year they used 43 million kilowatt-hours of energy. That's 10 times

Modern vehicles, modern offices and room for expansion give Aurora Hydro Manager Charlie Copland and Chairman Don Glass reason to smile.

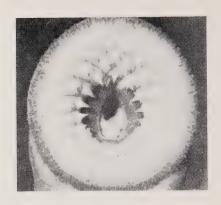
the amount used in the second year of the local commission's existence.

Over the years, there has been a consistency in both the members of the commission and the management.

Manager Charlie Copland has guided the day-to-day affairs of the utility since its birth, first of all as superintendent. Before moving to Aurora he was an electrical contractor in his home town of Harriston, and a lineman and operator for Welland Hydro.

In 25 years there have been only two chairmen of the commission — George Baldwin until late 1955 and Don Glass from then until the present. And with the exception of the ex-officio mayor, only four other men have sat on the commission. Don Hamilton has served since 1956 and Mayor Clarence Davis since 1964.

Relow: fearsome mouth by which the sea lamprey attaches itself to fish. Right: the killer and its prey.



dracula of the deep by Bob Morrow

in the battle against one of the most destructive and primitive denizens of the Great Lakes, the tide has finally turned

The tide of battle against the deadly sea lamprey, scourge of the Great Lakes, has finally turned After a long, bitter struggle lake trout are making a comeback in the deep, cold waters of Lake Superior. But the war is far from over.

That's the opinion of Canadian and U.S. officials, who have fought lamprey to a standstill in Lake Superior and are now concentrating their attacks on Lakes Huron and Michigan. Assaults on lamprey in Lake Erie and Lake Ontario will hinge ultimately on international efforts to control these parasites in the upper lakes.

Since a single female lamprey carries about 50,000 eggs into a spawning stream, scientists can't afford to relax their vigilance. Even a few lamprey can multiply and do irreparable harm to a lake trout fishery.

Dr. J. J. Tibbles, director of the Canada Department of Fisheries lamprey control station at Sault Ste. Marie, doubts whether the war will ever be completely won,

"It would be practically impossible to eradicate the sea lamprey from the Great Lakes, and a form of control will have to be maintained to ensure that the lamprey population is kept at a low level," he says.

Ken Loftus, supervisor of fisheries research for the Ontario Department of Lands and Forests, which is helping to restock depleted Lake Superior with lake trout, agrees. "We are going to be stuck with a continuing control program," he says bluntly.

Norman S. Baldwin, executive secretary of the international Great Lakes Fishery Commission, set up in 1956 primarily to control lamprey, points out that the program was concentrated initially on Lake Superior because the commission hadn't sufficient funds to establish control on the three upper lakes at the same time.

"Extension of the program to Lake Erie and Lake Ontario will depend on a modest increase in financial support and a reduction in the cost of maintaining control on the upper lakes," he says.

The landlocked sea lamprey, survivor of an ancient group of jawless fish, is by no means a newcomer to the Great Lakes.

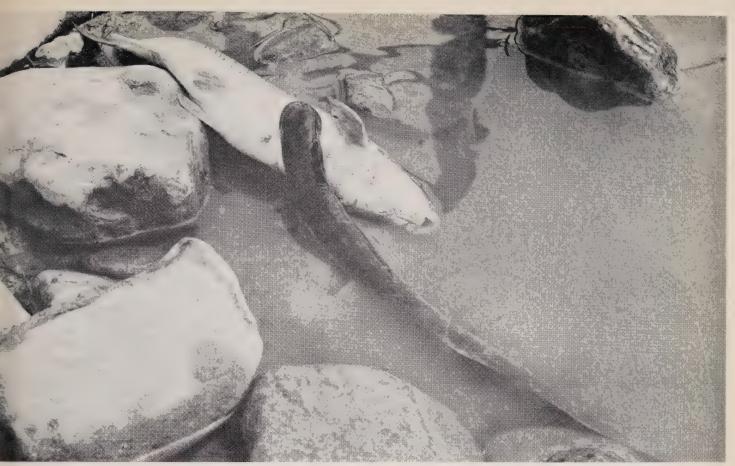
It has inhabited Lake Ontario and cell lakes in New York State since prehist times, but Niagara Falls proved an insurmountable barrier. Even though first Welland Canal was opened in the lamprey took nearly a century t penetrate into Lake Erie.

Lamprey were first found in shallow Lake Erie in 1921, but never becamplentiful. They were initially reporte Lake Michigan in 1936 and Lake H 1937 and soon became abundant. of them invaded Lake Superior in 116

Their rate of increase in the deep, c upper lakes was phenomenal. Lamr devastated lake trout fisheries, wort about \$28 million annually at today prices, and forced many fishermen hang up their nets. As well, lampre 18 been known to attack every other con cial fish in the lakes.

They have occasionally attached the selves to humans and a Roman arisk allegedly threw slaves guilty of min misdemeanors into a lamprey-infes

Deep-swimming trout have been to favorite prey of the sea lamprey. In 3 for example, commercial fishermen caught no lake trout at all in Lakes at Erie or St. Clair and less than 100 r



Ontario Department of Lands and Forests

ke Huron. Lake Superior produced ry 108,000 pounds, compared with inual average of 4,000,000 before the ic decline started there in 1953.

e-plentiful lake trout used to sell for 40 cents a pound. Now it's a \$1.65und delicacy — dearer than choice of steak — and sometimes unavailable. It's recently sold rainbow trout red from Scotland at \$1.90 a pound.

of some tributary streams, then die.
of some tributary streams, then die.
oung, called ammocoetes, live quietly muddy bottoms from four to seven, feeding on microscopic plant and al life. When six inches long, they op the adult lamprey's sucking-disk h lined with sharp, conical teeth.

, like fresh-water Draculas, they the lakes to prey voraciously on fish. harp tongue rasps away fish scales able the lamprey to suck its victim's and body juices. Many fish are tothers bear the scars for life.

12 to 18 months in the lakes, the ey return to a spawning stream. may penetrate 60 miles upstream in

search of a suitable spot to repeat the vicious cycle.

A 20-year battle has been waged against lamprey, but only in recent years have there been encouraging results. Many methods have been tried — mechanical and electrical barriers, portable electric shockers, dip nets, bulldozing and even concreting the stream bed where ammocoetes spawn.

Scientists have experimented with the effects of ultrasonic sound on the recurring electrical field that exists around the lamprey's head. In one test, a Hamilton zoologist rigged up a flash gun and camera, amplified the electrical field and the lamprey took its own picture. It remains to be seen whether a sound-killing device can be developed.

Success has been achieved, however, by using the selective chemical "3-tri-fluormethyl-4-nitrophenol", usually called TFM, which was discovered after testing more than 6,000 compounds. This lampricide isn't harmful to desirable fish. A newer weapon is Bayer 73, a chemical which increases the effectiveness of TFM and reduces the cost of killing larvae in streams. Electrical barriers are now mainly used to assess lamprey runs.

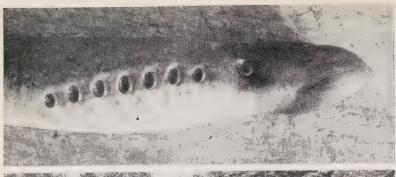
Since 1958, chemical treatment has reduced Lake Superior's lamprey population by about 90 per cent. For example,

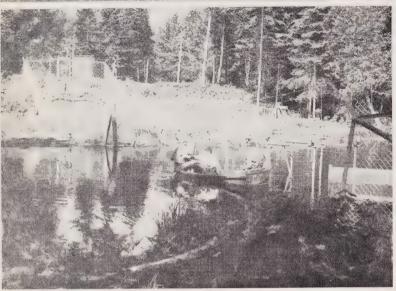
U.S. and Canadian lamprey catches dropped from 58,000 in that year to about 3,700 in 1967. Another encouraging sign: fewer lamprey-scarred fish taken by fishermen.

For some years, Ontario Hydro has co-operated with federal scientists in establishing safety precautions at electrical lamprey barriers and in using several Northern Ontario dams as giant mixmasters to ensure effective concentrations of lampricide. For continuing control, streams require treatment every four or five years.

Meanwhile, efforts to restock the upper lakes are in full swing. Since 1958, about 24 million lake trout have been placed in Lakes Superior and Michigan, and about 20,000 coho salmon. The Department of Lands and Forests releases about half a million lake trout annually in Lake Superior.

Since 1964, Lands and Forests has experimented with small plantings in Lakes Huron and Ontario of kokanee, a fresh-water variety of sockeye salmon. "Kokanee planted in Lake Huron thrived and spawned last fall beyond my wildest







dreams," says Mr. Loftus. But Lake Ontario results are still a question mark. Possibly kokanee will mature more slowly there.

At the same time, Lands and Forests is planning annual Lake Huron plantings of 500,000 splake, a highly selected cross between brook and lake trout. The splake program is timed to coincide with expected lamprey control in Lake Huron in 1969-70. Splake have the deep-swimming ability of lake trout and, because they spawn in two or three years, it's hoped they will multiply rapidly in spite of lamprey

Lands and Forests scientists have travelled to Europe and Japan to study species that might thrive in the Great Lakes.

"We are facing a changing environment, particularly on the lower Great Lakes,' says Mr. Loftus. He points out that pollution and lamprey predation complicate the ambitious fish management now in progress. Introduction of exotic fish must be done cautiously, he says, to avoid upsetting nature's delicate balance between species. "The key to restoring Lake Ontario is lamprey control."

Indeed, sea lamprey will likely be around indefinitely. Although a shorter, tastier lamprey has long been a delicacy in

Europe, no market exists for the 18-inch Great Lakes variety. A small-scale commercial fishery on Lake Huron folded several years ago.

But there may be some good in the evil-looking lamprev after all. Scientists interested in heart disease have discovered that the lamprev's primitive heart has no nerves regulating its beat. In fact, it appears to have a built-in pacemaker.

If the lamprey can be persuaded to yield its secret, who knows what benefits will befall millions of cardiac patients the world over?

the call of the sargasso

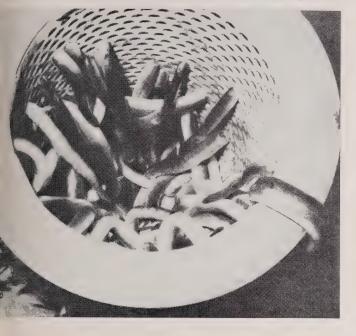
Unlike the unsavory sea lamprey, the American eel isn't a parasite and m. valuable kettle of fish. About 140,00 pounds were caught last year by Car fishermen, mainly in Lake Ontario ar the St. Lawrence River.

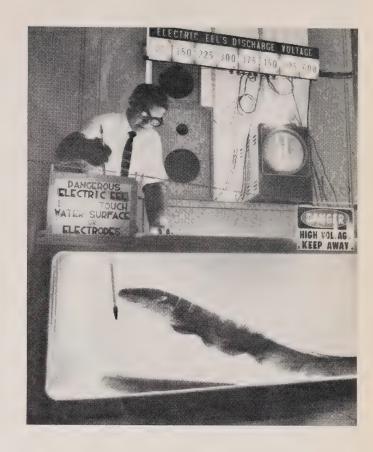
American eels spawn and die in the Sargasso Sea, off the West Indies. Y eels, called elvers, float north with the Gulf Stream and are about three inchil when they travel up the St. Lawrence Seaway. Then they swim up rivers a streams to fatten in lakes and ponds Some fully-grown specimens are five feet long and weigh 20 pounds.

Each summer, after dwelling eight t years in fresh water, thousands beg t migration. Impelled by instinct, swa is eels follow the swift-moving St. La le on their way back to the Sargasso.

One relatively new obstacle is the Robert H. Saunders power plant at Cornwall. Most of the eels are unir le by the plant. But some are killed by ne turbines and others trapped alive in 16 sumps. A few have also been trapp cal barriers and chemicals are common ns in the lamprey war, as these Lands prests photos show. Creature's eye and ing holes are clearly visible, top left.

Catch of American eels taken from hydro-electric plant at Cornwall. Right: shocking display by a resident of the Pittsburgh Aqua-Zoo.





plants on the Ottawa and waska rivers.

effort to find a solution to the annual em, Ontario Hydro is co-operating provincial and federal authorities to more about the habits of the American he Department of Lands and Forests els above and below the Cornwall to study their migration.

es are an indication, eel is a choice cy. Among the shark fin, green and bird's-nest soups on a Toronto tessen counter, European eel soup \$1.59 a tin.

and smoked American eel brings a pound in Toronto fish markets. It is Miskins, a former Hydro constructorker whose Toronto firm specializes the an area of the says sliced eel sprinkled with a juice makes a rich-tasting hors we.

ZAP!

and you're paralyzed

Maybe it's fanciful to talk about a tankful of electric eels for on-site power, but consider their potential at Pittsburgh's Aqua-Zoo. Through their jolting power — up to 600 volts — they activate lights, meters and loudspeakers above a special tank.

Strictly speaking, they're not eels but related to catfish and carp. In its natural habitat, "electrophorus electricus" is served by electricity in two distinct ways.

Lurking in South American marshes, the eel sends out low-voltage pulses that seem to function like radar. But when the fish detects food or an enemy, its power becomes more lethal. Switching over to full power, the eel zaps out a burst of high voltage.

At the Aqua-Zoo, visitors see an electrifying display of eel-power at feeding time. The aquarium tank has signs reading "Danger — High Voltage — Keep Away" and "Dangerous Electric Eel — Do Not Touch Water Surface or Electrodes."

The electrodes in question dip down into the water and absorb the eel's angry lunges.

When the fish strikes, visitors hear a crackle as the eel's electric charge strikes home. A panel over the tank lights up and shows the voltage of each attack. Voltage over 375 causes a strobe light to flash.

The whole rig was developed and contributed to the Aqua-Zoo by the Research Laboratories of the Westinghouse Electric Corporation.

Intrigued by the fish, engineers have been studying means of setting up circuitry that will run off the eels' complex electrical currents. What they discovered was enlightening: each discharge from an eel's body is really a series of quick pulses, varying in voltage but each lasting .0002 of a second. One discharge will last as long as five seconds. The eel can attack several times before its power begins to diminish.

An electric eel's tail is actually a network of thousands of electric cells. It can route these cells into a single circuit by switching them into series.

The attacking eel sends a stream of current out from its head into the surrounding water, zig-zagging a path back to its tail along a conductive route of dissolved materials. The eel is insulated against its own attack and that of another eel, but other fish or animals are good conductors and thus get the message.

where the action was

An infra-red camera that scans transmission lines and spots trouble before it even occurs is the kind of equipment utility engineers from Ontario and across Canada were able to view in a two-day display at Barrie last month.

The show was considered to be the largest of its kind on the continent. Sponsored by the Association of Municipal Electrical Utilities, it featured more than \$2 million worth of equipment which, like the camera, was designed specifically for use by utilities.

The camera works by detecting overheating in a line. It is sensitive enough to spot a difference in temperature of a

single degree.

Held at the Barrie Fairgrounds, the display and associated demonstrations were intended to acquaint utility personnel with the latest in construction and maintenance materials, techniques and equipment. From the smallest insulator to the largest bucket truck, they marked the culmination of innumerable meetings and a full year's planning.

"We first came to inspect the site 12 months ago," said Ray Coles, assistant manager of the AMEU. "We had to see it this time of the year to make sure it wouldn't turn into a quagmire at the first sign of rain. And it's a good job we did."

Torrential rain fell the night before the display. The ground was hard and firm the next day. Rain also set in on the second day, yet it failed to dampen the enthusiasm of 1,000 visitors from across the continent.

"We had delegates from as far afield as British Columbia and Newfoundland," Mr. Coles added. "From the feedback I received, this was the best show yet. Many of the utilities were interested in doing business which, I believe, will run into several millions of dollars as a result of the display."

A number of utilities and organizations contributed to the show's success, notably Barrie PUC, Brampton and North York

Visitors aloft in aerial buckets got this view of the equipment display while Ontario Hydro and utility officials were taken on a conducted tour. Top right shows AMEU assistant manager Ray Coles, association president F. L. G. Askwith, W. D. MacKenzie, of Ontario Hydro, and H. E. Brownhill, chairman of the AMEU's Engineering Board.





notos by Ron Brown







Hydros, the Electrical Utilities Safety Association, commercial associate members of the AMEU and Ontario Hydro. It was their painstaking months of planning which injected action into the show.

"In contrast to the last equipment display three years ago, there was considerable emphasis on underground distribution methods and the improved appearance of overhead lines," said AMEU manager Ron Mathieson. "This widening of scope resulted from the desire of some utilities to be brought up to date in these fields and to see some of the latest technical advances."

"Some utilities have developed their own techniques to meet the demand for progress," he added. "One development, for instance, is the introduction by North York of prefabricated transformer vaults that can be fitted together at the site saving all the rustration of waiting for concrete to set."

North York joined forces with Brampton Hydro in one of the display's most practical demonstrations — switching the Fairgrounds distribution system from overhead to underground making use of some of the most up-to-date exhibits. The \$7,000 undertaking, which included boring under nearby Essa Road, was completed during the show and will remain as a permanent installation.

Other demonstrations included the changing of insulators by a EUSA crew and live-line maintenance by Ontario Hydro. These were conducted on a 27,600-volt line, erected on the site for that purpose. Ontario Hydro also demonstrated electronic equipment used to detect faults in underground cable.

Then there were the frills that made the show. For the price of a smile, visitors could step into an aerial bucket and soar 60 feet for a bird's eye view of the site. On return, they received an instant photo of their trip. There were lucky draws and model trucks for the kids back home.

Commented Harold Brownhill, chairman of the AMEU's Engineering Board: "I was absolutely delighted with the show. I've been going to equipment displays since 1959 and this was certainly the biggest and the best."

The occasion exuded all the gaiety and fun of the fair. At the same time, there were some very serious conversations in quiet corners as keen-eyed utility men and representatives of the 60-odd manufacturers exhibiting at the show put their heads together.

But that, after all, was what it was all about.

Sixty-odd exhibitors and demonstrations of both overhead and undergroup line work drew plenty of attention. In convertible are H. E. Brownhill, Niagar E. C. Nokes, manager of the OMEA; J. R. Philips, OMEA president; Dr. J. Wilson, Barrie; R. S. Coles, assistant manager of the AMEU; W. R. Mathi, AMEU manager. At the lucky draw, Howard Winterburn, Ontario Hydro, a E. F. Burbank, Toronto Hydro.













a quiet place for Hydro people to learn, train and plan for the future

centre for the thinking man

The concept is working or, to get closer to the truth, it's overworking.

Back a few years ago, when it was decided to establish an Ontario Hydro "think factory", the planners forged out a concept. At the time, Ralph Nicholson, director of Manpower Resources and Development, said: "It will be a place where we can disengage ourselves temporarily from day-to-day matters so that we can learn. think, plan and make long-term decisions.

Huddled into the side of a slope on a 200-acre "campus" in the rolling hills of Caledon northeast of Orangeville, the centre is just that. Since it opened at the beginning of the year, it has had an average weekly capacity of 105 per cent.

Yet that's hardly surprising in a technicallyoriented world where knowledge becomes old hat almost overnight.

Engineering graduates, for example, face the prospect that half their knowhow

will be obsolete 10 years hence and half of what the engineer of 1978 will need to know has yet to be discovered. The same is true in other technical occupations. Even the techniques of supervision and sales are changing. This necessitates refresher courses for both groups.

Construction of the centre began in the summer of 1966 and the buildings received the finishing touches last fall. The result is what best can be termed a "people place". Each of the 93 employees accommodated has a single room. The overflow is put up in a motel a few miles away.

At first glance, the centre looks like one building stretching 500 feet along the sloping terrain. It is, however, six separate buildings married into one by glass walkways and the positioning of structures. In all, there are four levels.

At the heart of the complex is a large building containing administration offices, a 200-seat auditorium, a projection room, a dining room for 130 people and recreation rooms. Classrooms, if they can be called that, are scattered throughout the six buildings.

Completing the educational arrangements is a trades building on higher ground to

the south. Apart from classrooms, and workshops, this metal-clad build contains an earth-floor room for yeardemonstrations on transmission pole Level ground outside is utilized for or instruction in pole-climbing, tower vi and equipment handling.

Forestry employees have made the e 200 acres their classroom, rehabilita and maintaining the well-timbered gi and gaining experience on such trar portation items as snowmobiles.

However, it's not through the long-1 training courses that the concept of centre is most apparent. Rather, it's short two or three-day meetings or "skull" sessions that are providing t

"Small groups will come in for these problem-solving sessions," says Ge Breckenridge, the centre's manager. "They intend to spend only a normal working day, but invariably they'll s for dinner and work on until 10.30

Groups may come from any part of province. They may range from a grop supervisors or a huddle of helicopte pilots sorting out their problems to a entire regional meeting. As few as the people and as many as 250 have pu heads together.

Mr. Breckenridge says that feedbac from participants indicates that rare



A relaxed atmosphere and good food provide an ideal environment for brainstorming sessions at Ontario Hydro's new centre near Orangeville.







has so much work been accomplished in so little time.

The centre was designed to foster discussion. "Classrooms" are informal. Instead of rows of desks, rooms have a loose horseshoe of upholstered chairs or a group of chesterfields and side chairs around coffee tables. Even in the bedroom and stairway areas, lounge chairs are arranged for informal exchange of ideas and problems.

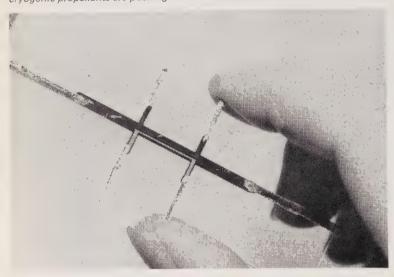
Although there is a permanent staff of 40, there's not a teacher among them. Instead, instructors are drawn from the job and are ready with up-to-date knowhow — thus avoiding the risk of a full-time teaching staff getting stale.

Perhaps getting closer to the truth of the centre's success, Mr. Breckenridge adds: "Clients order the facilities they want, and we set them up. We try to take care of all their needs — providing service without being servants."

the cool, cool world of cryogenics

by Hal O'Neil

Long thought impossible, this direct current transformer functions at supercold temperatures. Space travel was also once thought impossible, but cryogenic propellants are pushing man closer to the moon.



In this world, ice is pretty hot stuff. Like, I mean, this is a real cool environment.

You're not with it until you drop below minus 200 degrees. And man, that's when the kookiest things start happening. Like air sloshing around like so much seltzer water and rubber balls shattering instead of bouncing.

Kookie or not, cryogenics — the science of supercold — is having a profound effect on everything from space travel to medicine these days.

Although the word cryogenics was coined almost a century ago, it's only in the last 25 years that the science has come into any sort of prominence. Its impact was a terrifying one to those who lived in London during World War II. For it was cryogenic fluids — liquid hydrogen and oxygen — that propelled the deadly V-2 rockets.

Rocketry is still a part of the supercold science. Vapor escaping from giant rockets before blast-off from Cape Kennedy means cryogenic fuel is being used. And the push of these liquefied gases will ultimately land man on the moon.

But space exploration is only part of modern cryogenics.

One of the most promising areas lies in electrical research. In the cryogenic temperature range (minus 200 degrees F. to near the absolute zero mark of minus 459.7 degrees) many metals lose their electrical resistance. Near absolute zero some conductors, such as niobium-tin alloy, have zero resistance. Others, like pure aluminum, come close to it.

At absolute zero, there's no heat and no movement. Heat is molecules in motion and at absolute zero a substance would be inert. Not that absolute zero has ever been achieved. Science has approached

Superconductivity, the name for zero electrical resistance, was discovered more than 50 years ago. But little work was done until this decade when cryogenic temperatures became easily attainable. The cooling medium is usually liquid

One result of the rediscovery of superconductivity is the creation of supermagnets, which have a field strength far higher than ordinary magnets. The supermagnet opens up an entirely new method of power generation called magnetohydrodynamics. Explained simply, it means

passing an extremely hot ionized ga high speed between two supermagr causing a DC current.

A power output of more than 1,300 kilowatts has already been achieved an experimental MHD device. The loterm objective is to develop a large commercially feasible generator. Inc tions are that it would be 40 per cer more efficient than today's steam tu

At McGill University, in Montreal, the physics department is in the final st. building the world's most powerful magnet. According to Dr. Richard Stevenson, who designed the devic and heads the \$1 million project, th supermagnet will be more than a mice times more powerful than the magne st the earth.

While similar cryogenic magnets are only five or six inches in size, the N device will be about the size of a des Electric power will be applied to a life aluminum coil at 5,000 amperes an about 2 volts — enough to keep ar average household running for a m the An outer superconducting solenoid niobium-tin alloy will carry about 1 p amperes. Liquefied helium will keel h

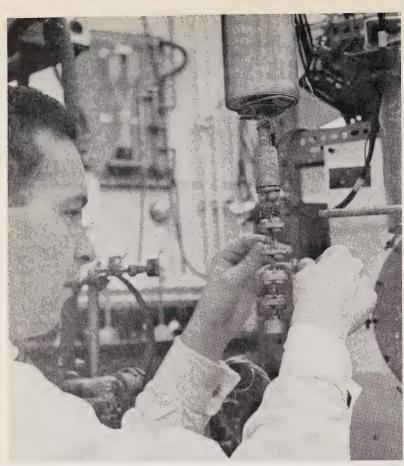


e at minus 452 degrees for briefds.

Il-type devices may eventually be in power storage — acting as voirs" of electric power through superconductive ability to maintain at flow with the power disconnected, like this could be plugged into ower supply and literally charged battery. Once disconnected, they is be held at deep-cold temperatures the power was needed.

henectady, N.Y., scientists of the ral Electric Research and Development e are investigating the use of rechilled underground cables to mit large blocks of electric power. Ultra-pure conductors lose much ir resistance at these temperatures, yogenic cables offer the potential resmitting large amounts of power in exted space. The three-year \$1 n-plus project is being financed by dison Electric Institute and the essee Valley Authority.

temperature of liquid hydrogen t minus 425 degrees) the resistance e copper is reduced about 500 One estimate based upon explorarork at the centre indicates that a cryogenic underground cable





Orientation of nuclei is studied at the University of Toronto with the aid of cryogenics. And at the U.S. General Electric Research Centre, a superconducting magnet is immersed in liquid helium for checking.

inside an insulated pipe 18 inches in diameter could carry 3,000 megawatts enough to supply one-third of the total power requirements of New York City.

Cryogenics has already come into common use in the food industry. Liquid nitrogen at a chilly minus 321 degrees is used to quick-freeze meat and vegetables consumed daily across the country. Items like corn are frozen so fast that ice crystals don't have time to form and the cellular structure is left undamaged This makes the food almost indistinguishable in taste from garden-fresh vegetables.

Even the trucking of fresh produce is being aided by nitrogen-cooled containers. Not only is it more convenient than ice or mechanical refrigeration, it's also more economical.

In metallurgy, liquid nitrogen is also proving its worth. Aircraft parts of aluminum are heat-treated then guenched in the liquid to improve their workability and strength. Sheet metal used to become distorted when quenched with water

and had to be hammered back into shape. Dowsing the sheets in liquid nitrogen has beaten the distortion problem.

Employment of cryogenic temperatures is growing rapidly in the medical field. Already, supercold temperatures are used in so-called "knifeless surgery". Using a liquid nitrogen probe, surgeons can remove cataracts from the surface of the eye. Tonsils may be frozen with a cryoprobe and removed quickly and painlessly. Cryo-surgical techniques have provided partial relief from Parkinson's disease by touching certain parts of the brain with a probe.

Dr. D. J. Shepley, head of the Medical Engineering Department of Toronto's Hospital for Sick Children, points out that supercold is used almost daily in examining human cells. Samples of tissue are removed, quick-frozen, stained and mounted. Thus identification can be made while the patient is still on the operating table.

"The cryo-technique works so fast that ice crystals don't have time to form and destroy a cell's structure," says the doctor.

Of interest to both the military and industrialists is the fact that the efficiency of such devices as masers and lasers, infra-red detectors, radar telescopes and other types of radar is greatly improved

at cryogenic temperatures. The U.S. N investigating the possibility of circul liquid helium through the electronic systems of U.S. ships to pep up pe ance. Cryogenics is also aiding comp technology. Small superconductive switches called cryotrons may soon bulky computers to shoe-box size.

Ultra-cold temperatures are reached through the same principle of comp and expanding gases that cools the normal domestic refrigerator. To atta cryogenic levels, the cooling cycle i continuously repeated.

Today's comic strips are getting intil cryogenic act, too. As any devotee Dick Tracy will tell you, real cool temperatures are the "in" thing. On a few weeks ago, one of Tracy's arch criminals escaped. He only got about steps before he froze solid in the mu 275-degree temperature of the mod

He's being kept at that temperature n taken back to earth to see whether e be heated up and brought back to That's a theory believed possible b some medical authorities. They adv 38 the freezing of human beings strick an incurable disease, such as canc They'd be kept in suspended anim. Di until a cure was found .



pulling no punches

the municipal utilities wanted no punches pulled at their recent public relations workshop. So for a guest speaker they picked on a newspaper editor — and a housewife. Phyllis Brebner, hard-hitting editor of the Meaford Express, is both. Here are a few of her remarks.

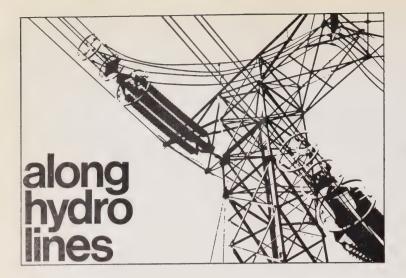
the editor speaks . . .

- If customers see their utility somewhat like an iceberg (only a fraction projecting, the rest submerged and unknown) you have an image problem. There are two ways of improving the image. One is by doing things, the other by telling. On the "do" side of the ledger, you can participate in parades, decorate the town's Christmas tree, or help the local merchants come up with ideas for seasonal lighting.
- You get good mileage out of working through schools, colleges and youth organizations or by arranging tours or special projects. What better way to a parent's heart than through his or her children? Not forgetting that these same children will be the parents and consumers of tomorrow.
- When you're telling, remember that editors often say that the only useful thing about most news releases is the paper clip. That's because many of them are only thinly disguised advertising or written in too technical a way or bear no relation to the community. What an editor has to sell is space. He cannot afford to give it away unless it has news value.
- When presenting your story, take a public service approach rather than a self-service one. And if possible use an interesting picture to illustrate it. Show the commission or manager with children or animals, other people in the community or even pretty girls.
- Timing of a release is also important. Make sure you send a release or grant an interview so that the daily and weekly newspaper covering your area will come out with the story at the same time. A weekly editor has only once a week to take a crack at the news.
- Have one of the staff keep a scrap book of press clippings so you can see how much publicity you are getting, and whether it's good or bad.

and the housewife

- Mrs. Average doesn't give two hoots about such things as your financial statements. She cares even less about your marvelous achievements in the nuclear field and the potential of the latest dam being built.
- Hydro is something she only understands in terms of a switch and how much it costs her each month. Why her lights dim around 4.30 on a winter afternoon; why the power went off when she had the roast in the oven; why her street cannot have better lighting so she will feel safe walking home alone at night these are her concerns.
- When her bill comes in, her first reaction is how much? She has given up trying to figure the bill out. She knows that the abbreviation El stands for electric and Wa for water, but Mrs. Average doesn't really know what a kilowatt is. She trusts that you are charging her the correct amount for the first rate, second and third rate. The bill is meaningless to her because it doesn't specify what the charges are for these different rates. She doesn't try to work out the bill, she just pays it.
- To her, the PUC is controlled by shadowy figures somewhat in the same category she sees capitalists. If asked, she'd say you are part of Ontario Hydro, one and the same, and would be surprised that you buy your power from it.
- She'd like to know the answers to such questions as Whether it is a myth that by using a number of appliances at one time she is shoving up her hydro bill? Was Grace right when she told her that if the wiring in her electric blanket becomes defective she could be electrocuted? Is it true that her fluorescent light fixtures use more electricity in the time they are coming on than if left to burn all day?

She trusts her utility as long as she gets what she wants — limitless electricity and hot water — and it doesn't empty her pocketbook and disrupt her home efficiency. You sell her comfort — sell her a little peace of mind by helping her to understand YOU.



Getting together

Ontario Hydro's Lancaster Area, in the eastern end of the province, is to be closed July 31. It will be merged with the Vankleek Hill Area, lying immediately to the north.

Explaining the consolidation, Hydro Chairman George Gathercole said: "Both these areas are comparatively small and office and service facilities at Vankleek Hill are of sufficient size to accommodate all staff and equipment." He estimated the move would save \$67,000 a year without affecting customer service.

The new Vankleek Hill Area will serve 9,560 rural customers and 1,200 municipal hydro customers.

Spring conference



Pipe, slippers and plain hard work

District 9 AMEU members, almost 100 strong, converged on North Bay last month for their spring conference. Among other business, delegates discussed better public relations, marketing procedures, accounting practices and the corrosion of vehicles and use of undercoating

One of the highlights was the bright future that A. B. Hayman, Ontario Hydro's Northeastern Region manager, painted for the group. Mr. Hayman, who retires this month, told delegates that sales for the last year were good, but to expect even better things in the years to come.

Mr. Hayman, who has headed the region since 1964, was honored at the meeting's luncheon. In the picture are Oscar Harris, North Bay, outgoing district president; Monty Kaye, Matheson, Ontario Hydro area manager; Doug. Hugill, Sault Ste. Marie; and Mr. Hayman. The scroll was presented to the retiring regional manager by Mr. Harris on behalf of the Northeastern Region AMEU, while the drill and sander came Mr. Hugill on behalf of the Northland Municipal Electric As tion, which he heads. Mr. Kaye traced the guest of honor year career with Hydro.

Chosen to guide the association for the next year were Williams, North Bay, president; Bev Stroud, North Bay, seci treasurer; and directors Merv Beckstead, Sault Ste. Mari Hurd Stewart, Thessalon.

Man of all trades

Forty-two years of service with Simcoe PUC, all of it as manager, came to an end for W. Doug Stalker when he retired recently. An electrical engineering graduate of the University of Toronto, Mr. Stalker first entered public service in 1925 as a councillor. He moved up to reeve in 1927, and it was in that year that the clerk of Simcoe died. Mr. Stalker took on the job along with that of town treasurer and manager of the PUC. Three years later, and again in 1946, he was appointed a Justice of the Peace



Following service in the army in World War II, Mr. returned to the town and relinquished his clerk-treasurer, devote his time to running the PUC. He has been succeed L. B. Svienbiornson.

As the Simcoe Reformer observed: "Few public n Simcoe's history have had a longer or more praiseworthy in the service of their community . . . "

municipal briefs

London PUC has stepped out of the small appliance repair to The work has been transferred to 25 local repair shops will PUC still services stoves, washers and dryers. A. L. Fil general manager, said the commission got into the small business years ago when hydro was a relatively new com and there were no other repair shops.

Tangible results associated with the OMEA-AMEU publi tions program are beginning to show up. Annual reports on the format suggested by the PR co-ordinating committee recently mailed out by North York Hydro (120,000 copie Etobicoke Hydro (83,000)

One big happy family is the way they see it in the munic of Richmond Hill and Vaughan Township. The two have r to seek consolidation along with the villages of Markham, ville and Woodbridge and the Township of Markham, which up the southern half of York County. Brian Bailey, Ry Vaughan, says the six are wasting money on duplicate ser Get-togethers are a good way to solve common proble that theory, members of the Sudbury commission played host to their counterparts from Coniston, Capreol, Web Massey and Espanola. Among topics discussed were relations and regional problems.

One of the newest communities for the nation's oldest real is being served by the most modern energy - electriff switch-throwing ceremony at the Islington reservation in C western Ontario was attended by Chief Roy McDonald, n of the council, David Greyeyes, superintendent of Indian at Kenora, and Ontario Hydro officials. The community is C near Hydro's 64,800-kilowatt generating station at Wile

Instant identification of every street light in Goderich h

possible by the efforts of Harry Crane, PUC electrical ntendent. He has prepared a large street map, with each ocation clearly marked. It has been presented to the town play in the council chambers.

ustomers in Oakville will be getting punched card bills by d of the year. The commission decided after a five-month to transfer billing and associated functions to an IBM bureau in Hamilton. Ross Lamb, general manager, says tual purchase of electronic equipment cannot be justified present number of customers.

of swapping. The commission recently approved exchangingh-rise antenna site for free service on its radio-equipped as. Bowen Electronics, of Brantford, will set up a two-way on Kress Hill water tower, with associated equipment in the area. In return, the company will maintain the PUC's radios free of charge.

red public relations is the aim of Preston PUC. A report d''Highlights'' is being prepared for customer distribution. iblication will show cost trends over the last decade, plus ation of general interest.

a is going underground again this year. As part of a conground, program, wiring along sections of Sparks, Queen, Albert, Metcalfe and O'Connor streets will be buried. The \$598,000 ag will be shared by Ottawa Hydro, the City of Ottawa and ational Capital Commission. It's by far the largest underd move ever undertaken by the city in one year.

'ork Hydro Chairman Jack Christie has really taken the c's "Tell the People" PR campaign to heart. Aside from a Hydro column in one of the local papers, he proclaimed Hydro Month" with all sorts of gimmicks to interest custals he getting results? The Leaside Advertiser had this to We in Leaside are just beginning to learn something about cal Hydro through Mr. Christie's weekly column."

y PUC is now serving an extra 2,350 customers — the of a merger of the town and township of Whitby. Equipserving the new customers was purchased April 2 from a Hydro for an estimated \$700,000.

nly was it "Tell the People" in Waterloo, it was "Show the ". Last month, the PUC unveiled a "Survey of Progress" stomers. It consisted of a two-hour bus tour of water and facilities in the city. An impressive booklet handed out on

ar explained the PUC's operations.

was the site of the spring conference of the Ontario council of the International Brotherhood of Electrical rs. Delegates representing municipal hydro commission yees, plus international officials, discussed everything etirement plans to collective bargaining over the two days. If the speakers were A. G. Stacey, general manager of the Hydro and past president of the AMEU. Chairman was woods, who heads Local 548, IBEW, which represents the Hydro employees.

ne with a view

rton, one of the original municipalities to take power from II Falls, the first generating station built by Ontario Hydro, nother step forward in the electrical world last month. The ommission moved from its town hall location to a spanking uilding.

it was an all-Beaverton effort. Members of the local comn designed and tendered the building, a local contractor together and now the village council is providing a town in front of the building. It was all done for less than 0 and includes enough land at the rear to locate a garage orkshop in a year or two.

building, located on a sweeping curve of Highway 12,



Short cut to a new era

was opened by R. J. Boyer, Ontario Hydro vice-chairman, with 100 citizens looking on.

Mr. Boyer traced the 54-year history of electricity in the town and paid tribute to the foresight of the commission. He pointed out that, on a percentage basis, Beaverton has more electric water heaters and new homes using electric heat than any municipality in the Georgian Bay area.

Helping out as Mr. Boyer (third from left), snips the ribbon with an electric knife are Dennis Whelan, commissioner, Fred Taylor, chairman, Lorne Beatty, manager, Mrs. I. Mitchell, secretary-treasurer, and Reeve William Gillespie.

Something special



From lineman to manager

The AMEU District 5 meeting at Niagara-on-the-Lake last month took on special significance for the host utility. It marked the retirement of Jerry Walsh, manager of Niagara Hydro for 23 years.

Mr. Walsh was born in the town and started with the commission in 1925 as a lineman. He moved to the post of manager in 1945 after three years' service in the Canadian Army.

At a dinner following the meeting, Mr. Walsh was the guest of honor. Niagara's Lord Mayor W. E. Theobald is seen congratulating Mr. Walsh while Chairman R. W. Howarth and W. S. Jennings, of Niagara, and District 5 President C. J. Halliday, of Stoney Creek, look on.

Speakers at the get-together were Joe Jordan and Bill Fisher, both of North York Hydro, and Jack Hassel, of the Bell Telephone Company, who talked about joint use of utility poles.

Retired . . . well, almost

Although Harry Luckins has formally stepped down from the post of secretary-treasurer of Sarnia Hydro, he isn't finished with Hydro. Nor is Hydro finished with him. He's still recording commission meeting minutes and will be involved with special



Au revoir, but not adieu

assignments, like rates studies and labor relations, for a year or two. And he is still secretary of District 8, OMEA.

There have been a lot of changes in the 28 years he's been on the Sarnia Hydro scene, one of the most notable being the tripling of customers to 17,000 while rates for power have dropped. And he has worked with only two managers, J. E. B. Phillips and Charles Phillips — a father and son combination.

Mr. Luckins is seen checking files with secretary Marianne O'Rae and his successor, Robert A. Herter.

Facelift for a two-year-old



Chapter one?

The Ontario Electrical League is undergoing a facelift. Not that it's middle-aged and beginning to sag around the jowls. Instead, a better way of operating has been found for the two-year-old organization.

OEL delegates from across the province voted at a two-day meeting to restructure the league to include a chapter committee in its governing body, thus establishing a direct line of communication between the provincial body and 37 local chapters. Previously, the two operated as separate entities. Now a member of a local chapter will automatically be a member of the provincial body.

Shown above are members of the new committee: George Bonser, North Bay; John Vanderheide, Sarnia, chairman; Neil Foreman, Listowel; Bob Webb, Peterborough and Bob Mc-Clevis, Barrie. Absent are Ed Longhouse, of Brampton, and Stan McDivitt of Port Arthur.

Strictly for the birds

That's the idea of Bill Vivian, practical minded sales promotion manager of Hamilton Hydro. Mr. Vivian couldn't bear the thought of thousands of old street light reflectors being scrapped across the province as new mercury vapor lights go up. So he deci turn them into bird feeders.

All Mr. Vivian does is attach two shades to a broom har one inverted to fill with seed, the other the right way up to p shelter. A few drain holes in the lower shade, a coat of pai he's in business. Up to now, he's made about 50 feeds friends and passed on the idea to dozens of others. Each costs him less than \$1 to make.

"Our home is on a ravine lot in Burlington and we tremendous number of wild birds all year round," says Mr. \ "We get blue jays, cardinals, orioles . . . sometimes 20 or 30 on the feeder at one time.'

Key post

Donald B. Ireland has been appointed Ontario Hydro's executive manager — regions. He succeeds Omer S. Russell, who was recently appointed assistant general manager - personnel. Mr. Ireland is well known in municipal utility circles and has headed Hydro's Consumer Service Division since 1961.

He joined Hydro in 1931 after graduating in electrical engineering from the University of Toronto. Over the years he has been



D. B Irelai

superintendent of Stratford and Owen Sound rural op areas; consumer service superintendent of Georgian Bay R assistant municipal service engineer at Head Office and sumer service and sales engineer in Central Region.

Born in Strathroy, where he received his early education Ireland is a member of the Association of Professional Enof Ontario, the Electric Club of Toronto and the Canadian

Building boom

Hydro in North Bay is a growing thing. Both the local comme and Ontario Hydro's Northeastern Region are in the mic building program.

North Bay Hydro recently gained approval for the const of a million-dollar office and service building on Fisher # Manager Barney Graham told the planning board that t acre site is ideal for serving the expanded municipality, sir close to the city by-pass. All maintenance trucks and pe as well as the business office will be located there. It patterned after the nearby Ontario Hydro regional office.

At present, work is continuing on a \$450,000 addition to regional office. The L-shaped section will consist of two 🛭 and a basement with an area of 10,700 square feet. The building will get electric heating and air conditioning as a the same program. Ab Hayman, regional manager, si project is due for completion around the end of the y will bring the staff under one roof, eliminating rented que

April energy production

Primary energy provided by Ontario Hydro in Al totalled 4.42 billion kilowatt-hours, an increase of the per cent over the same month a year ago.

For the first 4 months of 1968, the total is 19. billion kilowatt-hours, up 9.4 per cent over the sa period last year. Adjusted for seasonal influence primary energy demand in April was 4.50 billion ki watt-hours, .1 per cent less than the previous month

The seasonally adjusted total for April represe 54.00 billion kilowatt-hours at annual rates. This \$ 388.22 per cent of the energy demand in 1949.



good way to earn a punch on the nose is to est the formation of a society for the producof more and finer fly ash to one of the boys ydro's thermal electric section.

y ash is a powder of talcum consistency used by the combustion of pulverized coal extracted from flue gases as an antipollution sure before they enter the power plant they. Finding convenient holes-in-the nd in which to dump the stuff is a real lem and utilities around the world have searching for alternative approaches.

far, their efforts have been honorable, ted amounts of fly ash are being used as a saving cement additive and in the productof light-weight aggregates for special contribution. It's been utilized in concrete blocks and represent products and for such admirable oses as road building, land reclamation and aprove heavy soils for agriculture.

at a recent edition of the Financial Post ained an item which suggests to us that the less may be growing desperate and that more ic measures are in the offing. The hint was ded in a quote from an American authority the effect that fly ash is being investigated "inert" filler for pharmaceutical tablets.

e inference here is rather obvious. Should lse fail, they're going to try and make us

ensidering that a single Hydro station pros up to 400,000 tons of fly ash a year, it'll bitter pill to swallow and one likely to cause of gagging.

won't be easy, but it's certainly not beyond wiles and artifices of modern marketing ods.

isit a Hydro plant," the appeals will read, help yourselves to a bottle of pills absolutely 'And the patriotic approach can be exact — "Eat fly ash and help fight pollution." nat those ad agencies won't do with that ous fly ash formula, which includes iron ired blood, calcium for strong teeth and resium for constipation. "Feeling blue?" dimen will ask, "Get a matching complexion our smoke stack special." Or "On a diet? Hydro boilermaker — less than a calory a

refined fly ash powder could readily be oted as a cream subsitute for people who

like their coffee black and as a bedtime snack for those who don't particularly care to see another dawn,

As a tobacco additive, fly ash might be effectively marketed on its therapeutic merits. Like: "Lungs getting a bit malignant? Light up a Lakeview — they're pre-smoked."

What with the furore over gold and with silver in short supply, why not launch a monetary system based on fly ash? With nation after nation going on the fly ash standard, we'd soon have the lot neatly ingoted and stashed away in underground vaults. And it would serve South Africa right.

■ Switching from fly ash to potash, we find another serious case of glut. Speaking at the recent annual meeting of the Chemical Institute of Canada, the staff economist of the Tennessee Valley Authority drew a bleak picture of overproduction in the Canadian fertilizer industry.

Maybe it's as bad as he says, but he may have gathered some false impressions. Arriving at a time when the election campaign was reaching its peak, our American visitor could have been carried away by the evidence in the air. If so, he might twitch a nostril closer to home. Plenty of pungent soil enrichment material is being given off as a by-product of the political shennanigans south of the border.

■ The ebullient ex-mayor of Ottawa is at it again — this time in defense of the poor female who, she alleges, is handicapped in the political arena by a double standard of ethics. With a barb obviously directed at the gallantries of the Prime Minister, Miss Whitton asked: "What would be said if Judy LaMarsh or Pauline Jewett whirled down in a plane and fell on the necks of every teen-age boy and kissed him and sent him away sighing . . . kissing every mini-male? Wouldn't there be an uproar?

There certainly would, Miss Whitton, but we'd bet on the mini-males. Young fellows today are pretty fleet of foot and could probably show a clean pair of heels to the most ardent female politician.

■ Among the more persistent and ingenious of the human species is the litterbug. Having done his best with the 57 million square miles of dry land at his disposal here on earth, he's reaching for the stars.

At last count there were 225 man-made satellites orbiting the earth and one circling the moon. This does not include accompanying rocket stages and other pieces of space junk including a glove lost by an astronaut while out for a stroll around his space ship. In all, more than 600 items are floating about in the atmosphere.

Considering the size of the cosmic system, this is a humble achievement. But it's a start. Members of the younger generation can probably look forward to quiet evenings on the patio with nothing to do but contemplate the heavenly parade of banana skins, candy wrappers and empty beer cans.

■ Speaking of beer cans, mightn't it be a good idea to establish just one more department of government — The What Will We Do With The Damn Thing Department?

Such a group would be required to rule on the

disposability of every new product before it was permitted to reach the market.

Had we thought of it sooner, such hard-toget-rid-of-items as plastic bleach bottles, hard detergents, no-refund pop bottles, throw-away beer cans and certain political leaders might never have seen the light of day.

Quite aside from the aesthetics of the thing, empty beer cans are an out-and-out hazard. Take the Detroit case. A \$120-million nuclear reactor designed to produce 62,000 kilowatts of electric power was rendered hors de combat for months by a piece of metal in the reactor chamber. Management isn't saying, but it's thought that the foreign object was an empty beer can left by a workman during construction.

Not that we're entirely against beer, you understand — just beer cans — empty ones in particular.

we recently had occasion to review some of the speeches delivered by the finalists in this year's public speaking contest and found them first rate. We were particularly impressed by the remarks of one young lad relative to the one-sex society springing up around us. He drew a very apt parallel between the penguin's inability to differentiate between the sexes on the basis of appearance and the growing human difficulties in the same area.

A courting penguin, he went on to relate, drops a stone in front of another penguin. If it's picked up, the other penguin is a female and they can proceed with the business at hand.

Rather cunning, we think, but fraught with some danger insomuch as male penguins must learn to refrain, under any circumstances, from picking up stones.

Whether or not the hippies use similar tactics, we wouldn't know but it's something the Olympic committee might ponder before the next fun and games. We have in mind those saliva tests the officials were considering to keep male athletes from competing in the ladies' events.

They may be scientific, but surely there's an easier way.

■ Some time ago we had occasion to congratulate North Bay for becoming the largest city in Ontario overnight through the process of annexation. They now appear to have bitten off more than they could chew — much less digest.

City Council is studying the possibility of returning some of its newly-acquired territory — a slice about the size of the State of Texas — to its original owners — the moose. Tax revenue from the 27,000-acre tract in question is estimated at \$500 annually while road maintenance alone is expected to cost about \$130,000.

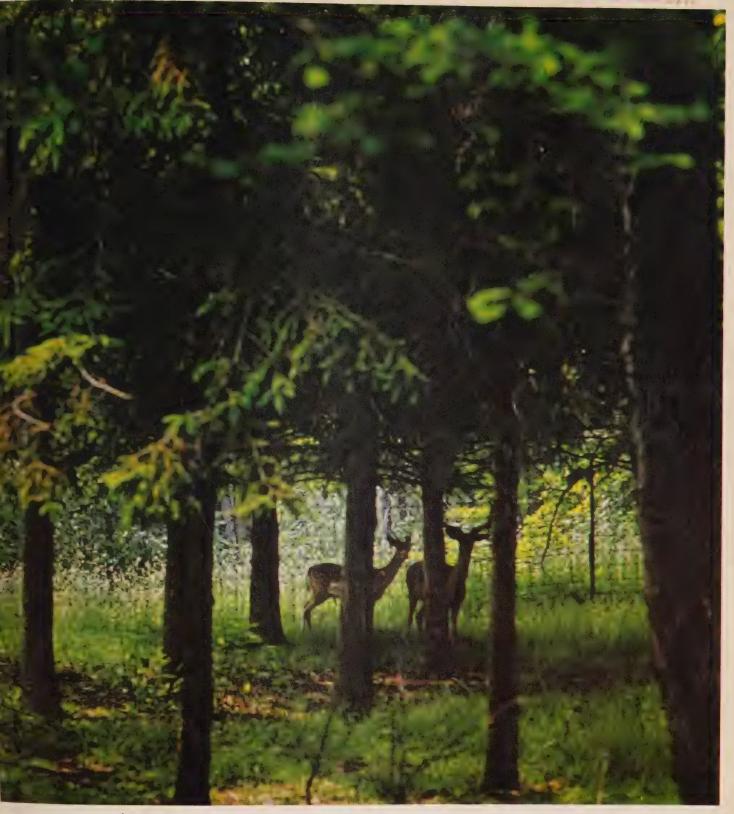
Here is one area where the economies of size definitely don't apply. Should the separatists succeed, the city will drop back to second place in the space race to Sault Ste. Marie.

Finally, we'd like to tick off that gentleman who suggested that Girl Guide leaders consider including talks about drugs and sex in their program.

Now really! Anyone who thinks for one second that a teen-age girl is more interested in boys than she is in tying a double-breasted sheepshank, building a lean-to or learning to hoot like an owl, just isn't with it.



Follow-the-leader? That's kid's stuff. Hydro prefers to set the pace — like in performing maintenance on live 500,000-volt lines. The lineman about to tackle the job is wearing a metallic shielding suit that literally stops his hair from standing on end. Working on lines without cutting the "juice" cuts costs and improves service. It's one of the reasons why electrical rates in Ontario are among the world's lowest. Believe it or not, electricity costs about the same today as it did 10 years ago. If you'll pardon the pun — it's a current bargain.



saving a buck • anchors aweigh at Fenelon Falls • patio power

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the cover

Down in the forest, something stirred. It was cameraman Harry Wilson and this curious couple retreated to observe him from a more discreet distance. The deer belong to a herd maintained by Waterford PUC to keep down vegetation on its waterworks property. See page 8 for the story.

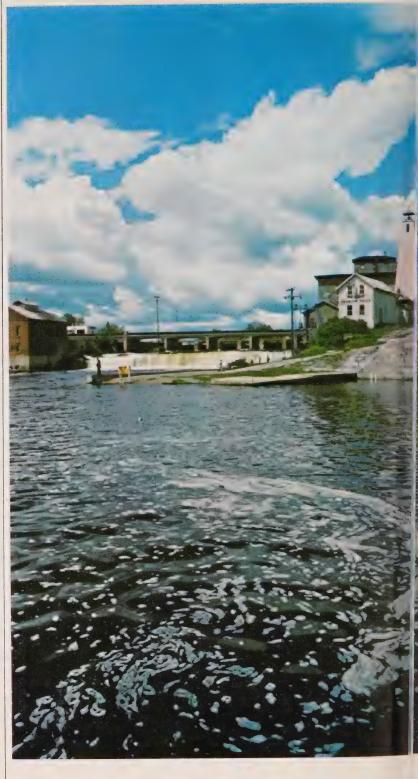
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Samuel de Champlain was one of the first white men to paddle dov Omemee River past the future site of Fenelon Falls. Now the tourist in is the area's mainstay and thousands of boating enthusiasts follow wake each year. The river has meant much to Fenelon Falls. It powe first grist and lumber mills. It brought trade to the village, which at or was the upper terminus for navigation on the Kawartha Lakes. Too part of the Trent Canal system, it brings the tourists. The river also but electric power to the village and a small generating station still of there. But power demands have a habit of growing and last year Falls joined the large number of utilities buying power from Ontario at cost. More about Fenelon Falls and its fascinating history starts on page 1997.

Some of North America's top physicists clinked coffee cups at the joint Toronto conference of the Canadian Nuclear Association and the American Nuclear Society. Ideas flowed among the 1,800 delegates like so much heavy water. Topics ran the gamut from "The Impact of Nuclear Power on System Planning" to "Limitations on the Pulsed-Neutron Technique of Measuring Subcritical Parameters." It would be almost impossible to even attempt blanket coverage of such a gettogether. So we've steered clear of the conventional and present instead some of the stranger paths travelled by nuclear research.

atoms unlimited

yaks still baffle the scientists

One of the discoveries made with a new method of crime detection is that human hair and yak hair are substantially the same.

Dr. S. S. Krishnan, a nuclear chemist at the Ontario Centre of Forensic Science, told delegates that a large Canadian department store suspected that women's wigs labelled human hair actually came from the long-haired Tibetan ox. But radiation tests showed that mineral traces in human hair were not substantially different from those in hair known to come from the yak.

"I don't know why anyone would complain," he said. "They look the same and yak hair is cheaper."

Dr. Krishnan was describing the science of forensic activation analysis, a method of identifying specimens by bombarding them with neutrons and then measuring the resulting emission of gamma rays. Activation analysis applied to crime was pioneered in Toronto more than 12 years ago by University of Toronto professor R. E. Jervis. Since then, the technique has cropped up in criminal proceedings in Canada, the United States, Australia, Denmark and England.

Dr. Krishnan said that 31 criminal and civil cases have been investigated by the Ontario Centre of Forensic Science in the past two years. Six have gone to court.

One murder was detected because black particles recovered from a body burned beyond recognition proved to be bullet fragments. A Vancouver man was convicted of his wife's murder after analysis of her hair showed that arsenic had been ingested during a six-week confinement in hospital before her death. He had visited his wife daily, bringing her cake.

tiny power plant to aid heart

In these times of megawatts, gigawatts, terawatts and other astronomical measurements of electrical energy, news is being made by one-tenth of a watt (thermal). And that's even less than a tenth (electrical).

The mini-output is designed for implantation into the human chest in a new form of heart pacemaker. Six prototypes have been made for Numec Corp. in the U.S. by Mound Laboratories, a division of Monsanto. One more is being held for historical purposes.

Pacemakers as such aren't new, but the energy supply of the latest is good for 10 years without replacement. The entire unit is about the size of a pack of cigarettes. Its heat source is three tiny pins of plutonium weighing a fifth of a gram in total.

D. L. Fleming, of Mound Labs, who delivered a paper on the subject to the joint nuclear conference, said the device should be able to withstand a gunshot.

Since the plutonium's radiation is beta particles, shielding the body from it was no problem: the cover of this magazine would be effective shielding. The materials are platinum, nickel and titanium, which are unaffected by body fluids. Mr. Fleming said it was expected that experimental use with animals would begin this summer.



deserts may bloom

Hazards arising from a nuclear plant being destroyed in an earthquake can be elim-

floating power stations

power for 2m homes

Nuclear power may one day turn deserts into fertile agricultural land, said Alvin M. Weinberg, director of the US Laboratories at Oak Ridge, Tennessee.

In a luncheon address, Dr. Weinberg spoke about a group study of massive agro-industrial complexes on uninhabited warm coastal desert possessing arable land. A pair of nuclear reactors with a total output of 1,000 megawatts could operate a desalting plant to produce 10,000,000,000 gallons of fresh water a day. This water would be used to irrigate the surrounding desert.

It would be more of a food factory than a farm, covering several hundred thousand acres. Surplus electricity would be used to produce basic chemicals such as fertilizer. Costs could be reduced to 20 cents a gallon or lower if advanced breeder reactors were used.

The capital investments would be large — say \$1,500 million for an agro-industrial complex using 2,000 megawatts - and producing, in addition to its industrial products, enough food to feed around five million people," he said.

The scientist added that projects of this kind are already under study in India. One is a complex based on nuclear desalting in Gujarat. Another, on the Ganges plain, is based on tapping vast underground lakes of fresh water with nuclear-powered pumps.

inated by building a quake-proof installation, says Harold M. Busey, of the D. W. Douglas Laboratories, Washington State.

His idea is to float the station on water to protect it from severe earth tremors. It would be surrounded by a breakwater or a damping device to protect it from waves. A causeway would provide access from the shore.

He suggests mounting the entire station on a rigid deck, so that all components move together and there is no fracturing of connecting pipes. Air springs or cavities open to the sea at the bottom and selectively ballasted for weight distribution would act as cushions to absorb vertical shock.

A study for a station site off the California coast determined that seismic protection would add about six per cent to the cost of a similar but unprotected power plant built in the same location on an artificial island.

Ontario Hydro expects to introd further 3,000,000 kilowatts of capacity in addition to that already p said Ontario Hydro Chairman Gathercole. This would provide power for two million homes.

He said he could not make definite announcement, but suggest the new facilities might consist reactors of 750,000 kilowatts each

Mr. Gathercole, earlier elected pr of the Canadian Nuclear Association delegates that at this stage Hyd "not yet able to put all its kilowatts technological basket, and to maintain tem balance we also expect to corf additional 1,000,000 kilowatts in ventional thermal generation.

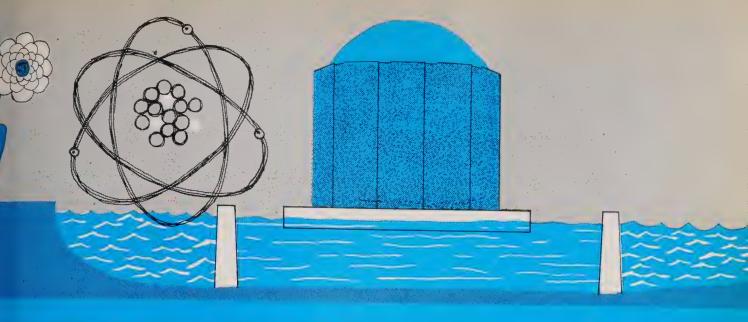
'However," he added, "this w the first time that nuclear povi formed such a large part of new ch ment."

Mr. Gathercole said that nuclea was "opening the door to a new a a multitude of benefits." Large-sc e clear reactors would produce elector ergy cheaper than conventional stations and many remote hydro le developments.

He predicted that the science ar t nology which had brought nuclea r to its present state of developmen do "much more than keep the lig 3 It promised to move this country new industrial age.

"And, of course," he added, "v lit clear power can do for Canada, the States, Britain and other indus a countries, it can also do for the re o world.'

Mr. Gathercole succeeds S. N vice-chairman and director of ()a Bechtel Ltd., as president of the (A



buggy blasts off

heating the st. lawrence How to loosen winter's grip on the

ly before last Christmas, scientists red a 13-foot long white-painted caninto a hole drilled more than 4,000 nto the sandstone formation of the Juan Basin, New Mexico. An arean a two-and-a-half mile radius of the was then evacuated and the nuclear e, for that is what it was, exploded.

e 26-kiloton blast created an underid chamber of broken rock 333 feet and nearly 80 feet across. Rock around nimney was extensively fractured.

de-named Project Gasbuggy, the joint government-industry experiment was abed to members of the American ar Association. Its aim was to deterwhether the explosion would release all gas trapped in rock deep below arth's surface.

easibility study before the test cond that potential hazards from radioty and shock waves could be avoided the flow of natural gas could be used sevenfold. The results will not be not for a year or more until all the data een analyzed.

discussing the industrial potential of ar explosives, Glenn C. Werth, of the reity of California, told delegates: potential of the nuclear explosive for my has been projected to be exceeding but, at this point in time, is not d. Continued applied research in the of interest to industry will lead the Dward this verification."

How to loosen winter's grip on the St. Lawrence Seaway is a perplexing and seemingly hypothetical question. Yet a Canadian scientist has come up with an intriguing possibility. He suggests that by the year 2000 there will be sufficient waste heat from carefully sited nuclear power stations to limit the formation of seaway ice.

"We should be making engineering and economic studies now to assess the benefits of an extended season," says J. G. Biggs, of Atomic Energy of Canada. "We should also consider every application of the waste heat we will be adding to our environment."

Mr. Biggs says that by the turn of the century the amount of useable waste heat from nuclear plants will have reached 100,000 megawatts. He considers two approaches, one extending the shipping season to the end of December, the other to the end of January.

In the first approach, nuclear stations would be sited at the head of existing canals and locks and their cooling water effluent directed into them. The locks would require minor modifications to permit a continuous flow. Based on current estimates of nuclear growth in Quebec, Ontario and New York State, this first approach could be operating by 1987.

The second approach is based on the amount of nuclear capacity for the year 2000 and would require significant modifications to the seaway. These would include rock barrages to limit areas of open water and reduce the quantity of heat required.

Mr. Biggs suggests barrages to create narrow waterways through Lakes St. Peter, St. Francis and St. Clair, also barrages between islands and the mainland to restrict the Upper St. Lawrence and St. Mary's rivers to a narrow channel.

"When costs and revenues are compared," he adds, "extending the season to the end of December seems attractive. Extending the season to the end of January does not appear profitable. However, detailed studies would determine the optimum closing date.

"Sites must be selected far in advance of station operation. Therefore, to take full advantages of this concept, it should be studied in detail now."







Aubrey Edwards and technician Chuck Sonstenes put new aluminum conductor through exhaustive laboratory tests. Top right, galloping phenomenon is clearly visible along length of conductor aerodynamically shaped to simulate icing conditions.



Aubrey Edwards has been engaged in research for Ontario Hydro since 1948, when he emigrated from England. During the second world war he worked for the Royal Navy Scientific Service, developing ways of detecting enemy vessels by their high-frequency radio transmissions.

"VHF transmissions were difficult to pinpoint at that time and the Germans thought they could break radio silence with immunity," he says. "We were ultimately responsible for half the U-boats sunk."

A keen sportsman, Mr. Edwards lists tennis, squash and badminton among his hobbies. His chief interest in the past seven years has been his work with the United Nations Association. He is president of the association's branch at Oakville, where he lives with his wife and two boys.

alloping o a tandstill

Canadian scientists revealed at an neering symposium in Chicago last th details of a breakthrough that may | electrical utilities millions of dollars.

news came in a technical paper spiringly entitled "Self-damping ductors for the control of vibration and oping of transmission lines." Translinto everyday terms it means that rey Edwards, of Ontario Hydro, and ur Livingston, of the Alcan Laboras in Montreal, have come up with a ductor that automatically smothers the of troublesome high-frequency vibrathat occur in even a light breeze.

se aeolian vibrations result from wind es on the lee of the conductor and are consible for the familiar humming often d near small overhead lines such as whone wires. If left uncontrolled in er lines, they result in metal fatigue in a risingly short time. There's evidence, that the new design may control uping — a low-frequency oscillation ed by a combination of high winds ice-coated lines.

live with galloping costs a minimum 5,000 a mile," says Mr. Edwards. Inductors have to be spaced far enough to so they don't approach too closely ag galloping. This means wider rightsay and extra steel for larger towers. ban areas, where land is expensive, an add \$20,000 a mile to construction.

luate control of aeolian vibration will it utilities to operate their transmission

lines at greater tension — up to 50 per cent higher than is now the case — resulting in the use of fewer or smaller towers, improved appearance and substantial savings. Aeolian vibration is at present controlled by damping devices attached to the line. However, it is uneconomic to install sufficient dampers to permit the line tension to be increased.

The new conductor is the result of five years of co-operative research by Ontario Hydro and Alcan, the Canadian aluminum giant. Its design is based on two principles of energy dissipation: by friction between the aluminum wires in each layer and by interference, or impact, between the steel core of the conductor and the surrounding aluminum wires.

Mr. Edwards says that friction damping will help to control low-frequency vibrations of the galloping type, although it contributes toward minimizing the entire spectrum of conductor oscillations. Interference damping, which requires a small space between the core and the overlying wires, is effectively only over the high-frequency range. Energy from each type of damping action is dissipated with the release of a small amount of heat. Conductor wires are trapezoidal rather than round in shape to promote inter-wire movement and friction.

Development studies on the new conductor began in the Ontario Hydro laboratories in Etobicoke and included work at Scarborough where Hydro maintains two miles of transmission line for galloping tests. This line was fitted with air foils simulating natural ice deposits. It succeeded for the first time on full-scale spans in producing galloping under everyday conditions, making possible a speedy evaluation of control methods and devices.

As required by the program, the Alcan plant at Shawinigan, Quebec, manufactured a conductor to the research group's specifications. Further tests were run both indoors and out at the Alcan installation at Kingston. Hydro also installed the new conductor on regular transmission lines and observed its performance under natural icing conditions. During one ice storm, five conventional conductors galloped while the self-damping conductor remained stationary.

These studies established the effectiveness of the self-damping conductor in dealing with aeolian vibrations and indicated promise for controlling galloping and other low-frequency oscillations.

Mr. Edwards found his work with Alcan engineers a stimulating experience. "Both they and my colleagues in Hydro couldn't have been more co-operative," he says. And while he displays typical scientific caution in making claims about the performance of the new conductor, he remains highly optimistic about its possibilities. "I think it is going to be used in significant quantities before too long," he adds modestly.

outlet the outdoor

Call it a patio, lanai, courtyard, grotto, roof garden, porch or simply a backyard. The name hardly matters.

It's all part of the city dweller's recent but passionate flirtation with the outdoors. In the last five years, Canadians have taken part in the greatest summertime transition from the live-in to the live-out. And they've taken all the comforts of home with them, including electric power.

"No house should be designed today without some form of outside private area," says one architect. "And outdoor weather-proof wiring is as routine in house plans as the kitchen sink.'

It's a new kind of live-out where city dwellers without cottages and determined to avoid weekend traffic line-ups weave their own wind-controlled, sun-controlled, rain-proof outdoors around them. Gone are the days when there was a living room indoors and a small patch of flowers outdoors and never the two did meet. The key word today is continuity.

Says Toronto architect Alastair Grant: "Most Canadian houses were built on the frontier philosophy when people were struggling with the cold. Only recently have we grasped that heating is cheap and we can use more glass for light.'

Most houses had backyards, he says, but they led off from the kitchen and were used for garbage disposal. The trend now is to use the backyard and live in it as long as the short Canadian summer will allow.

The first patio on this continent is believed to have been built by early Spaniards in the American West. The name itself is Spanish. In Hawaii, the word is lanai and no Hawaiian home is complete without one. Easily the most lived-in area of the house, it is a half-enclosed room



which provides a transition from house to garden.

Architect Steve Irwin says the backyard phenomenon in Ontario should be viewed in three distinct environments. In the country, you develop a small area to blend in with the landscape. In suburbia, you have an elaborate patio complete with swimming pool and sauna. In the centre of the city, there is a premium on space so the trend is to enclosed courtyards or roof gardens and balconies.

Even on country estates the emphasis is on smaller outdoor units of privacy. One medal-winning house is in dense woods with a spacious balcony raised from ground level to avoid mosquitoes. Electric bug-killing lights installed in the balcony give further protection. (These lights have a blue chemical which attracts and kills most night flying insects.)

It's in the suburbs and smaller cities like Ottawa and London that the backyard patio can be most successfully applied. While the cottage is really a weekend appetizer, the patio can be used daily, May to September.

Suburban patios have brought with them the allure of patio accompaniments. The

swimming pool boom which first h Canada five years ago is on a big One estimate puts the number of p in-ground pools in Canada at 24,0 Pools can be purchased for as little \$2,800 and cost \$50 to \$100 a year I tain. The makers claim they are no within the reach of the \$8,000-a-y family.

Along with pools, manufacturers at § thermostat-controlled electric sw h pool heaters that are installed alor N the filter equipment and the electric

Keeping the backyard beautiful is, course, a major chore. But even h tric power is taking an increasing said the burden. Statistics from Canadi General Electric and Sunbeam sho from 1963 to 1967, sales of power of increased 57 per cent. Sales of ele [1] mowers, on the other hand, increa almost 300 per cent. Electric mov |S command 40 per cent of the marke in the figure is rapidly rising

"Electric mowers are so easy to or at that I can now let my wife mow the N says a CGE sales manager. Sales (hedge trimmers and lawn edgers rising rapidly, too.



urban sprawl forcing a large trend rd apartment living — Ontario alone bout half a million apartment units — asing use will be made of balconies ubstitute for the backyard. Individual yards are now being incorporated nany row housing developments.

very workable plan calls for 10 at-style semi-detached houses having amon playing area, but each house a private patio entrance at ground and a sundeck extending from the louse. There is a shower and changing in the penthouse so that electric is may be installed on the deck.

trial designer Michael Stewart, whose sundeck is built in a remodelled s, says Toronto is fortunate in having lth of old homes that are being natively converted to give maximum or enjoyment.

hether they live in apartments or in s, Canadians are enthusiastically it out. Outdoor appliances sales — urized or portable — are zooming. sales of lights of all kinds: swivel, overhead, underwater. Designers are

concocting special patio furniture and loose harem-like garments for patio wear.

A Canadian firm recently carried off a prize for plastic patio chairs which, lit from beneath, give a warm translucent glow. A few years ago, the term sauna was relatively unknown. Today it is on everyone's lips. One company is selling hundreds of electric plug-in mini-saunas to apartment dwellers for their balconies. And the pool owner, of course, pitches his beside the pool.

Most widespread is the barbecue cult. Barbecues come in all shapes, sizes and colors. They are wheelable, foldable, and can even be covered up to become patio benches or bird baths. Manufacturers are selling everything from Japanese hibachis to smoke-free, ash-free, self-cleaning electric barbecues.

An electric charcoal lighter for barbecues was introduced eight years ago, but it was almost ignored until last year. This year it was displayed in the Toronto Design Centre and is now a best-seller.

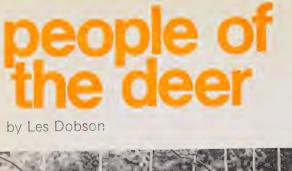
Then there are hot dog roasters, corn poppers and even poodle clippers. And the patio cocktail hour is hardly complete without an electric ice crusher. Of course,

practically any indoor appliance may be taken outdoors providing there's a suitable outlet.

Down south, the Californian sweats over ways to cool his patio. But the Ontarian finds heating devices to stretch his patio hours. Come September and that cool drink outside becomes a luxury he could live without. The most practical choice is the radiant heat panel for use overhead. Says a leading retailer: "There was a time we couldn't even give away radiant heaters in the summer. Now summer sales are hovering near our winter sales."

By far the most exciting development in outdoor electric appliances is the rechargeable battery. Costs are still high, but within a few years the rechargeable cell will play a major part in the life of outdoor fans. Regular home appliances will probably work for two or three weeks without being plugged in.

Meanwhile, Canadians are taking a cue from the pioneers and moving outdoors. But they're sticking close to home. The back-to-nature movement of the pluggedin set is limited by the length of their electrical extensions.









eidi, Heidi! ome on, Heidi.''

Honey peered through the wire mesh he tall fence. There was a rustling I a thumping in the undergrowth. ally, a small deer emerged, its antlers blunted, fuzz-covered stumps.

ome on,'' said Mr. Honey.

h a look of recognition, the creature ted from the bushes then broke into a . It pressed against the fence to zle in Wilton Honey's pocket. "I guess think I'm a silly old man," he said, "but is my hobby."

di, an English fallow deer, lives on acres of waterworks property owned Waterford PUC. But so do 41 others, it 45 or maybe 50? That's the way 've multiplied since Mr. Honey first ught eight animals from Dundas during second world war. And the herd has in thinned several times.

brought them in to keep down the s," said Mr. Honey, who has sat on commission for 35 years and served as rman for half that time. "Our mowing was tremendous — about \$400 a year, in those days."

rt from Heidi, the remainder of the runs wild. They'll approach the e to munch delicacies proffered by ers-by, but at the slightest sign of m they melt into the shadows of Deer. Only the occasional thud of hooves g the spring-studded escarpment, the isional set of antlers sticking out from nd some broad trunk, betray their ence.

ng to the animals . . . 77-year-old Wilton y. Top photos show Heidi as he appears and also receiving baby food as a fawn. y, the 14 acres of Deer Park give the Water-PUC herd ample room to run. Heidi is different, but Heidi was raised in the comfort of Mr. Honey's solid fourbedroom house that sits above the town on Main Street South.

"Heidi's father was so tame he'd take food from between my lips," said 77-year-old Mr. Honey. "About three years ago I went down to Deer Park and he came to the gate. I could see he wasn't acting normally. He wanted me to go with him. When I walked in any other direction he would block the way.

"Finally, I could hear the squeals. The mother was trying to kill Heidi for some reason. She was jumping up and down on him. The father chased her away and I took Heidi home. He had three broken ribs and a broken hip."

Mr. and Mrs. Honey nursed the tiny fawn back to health. They fed it a diet of baby food and milk; they built a pen for it in the backyard.

"He was the perfect pet," said Mr. Honey. "He would lie on the rug and snore. He would play hide-and-seek with my wife around the house. You should have seen the expression on his face, he'd get so excited. Then I'd take him for walks on the leash, just like a dog.

"But we had to put him back in the park," he sighed. "When his antlers came he got too hard to handle. He became a man.

"Look," he raised his trousers leg to reveal the scars, "he did this. He didn't do it deliberately, of course, but last October I was down in the park with him after dark and tripped over some wood. I don't think he realized who it was. He got scared and did this.

"I knew I was bleeding pretty badly because my foot was wet. Then the blood spurted and hit him in the face. He came up and started to lick the wound. His saliva stopped the bleeding."

Perhaps Mr. Honey's love for animals is rooted deep in his family's farming tradition. His grandfather was raised in an orphanage and emigrated from Cornwall, England, at the age of 31 to farm crown land

"It took them six weeks to sail the Atlantic," said Mr. Honey. "He arrived with 35 cents in his pocket, two boys and a pregnant wife."

Mr. Honey's father farmed at Villa Nova, about six miles from Waterford, and Mr. Honey later took over, expanding the farm to 250 acres and raising Holsteins and pure-bred horses. His wife came from a farming family at Scotland, a few miles north of Waterford.

"This was one of the first districts with electric power," he recalled. "I was married in 1916 and bought an electric milking machine that summer. My heart was always with the animals, though, and not with growing crops. I ran away to Toronto at the age of 17 to become a veterinarian. It took Dad five days to find me. He brought me back to the farm."

Nevertheless, Mr. Honey has always kept a set of surgical instruments and rarely found the need to call on the vet during his days as a farmer. "I've delivered at least half a dozen calves by Caesarian operation," he said.

Before selling his farm, Mr. Honey struck up a lifelong friendship with the late Fred Fleming, who worked for a large feedstuff organization. Mr. Fleming was the father of Dundas dentist Dr. J. D. Fleming, now chairman of the Dundas utility and a past president of the Ontario Municipal Electric Association. It was Dr. Fleming who procured the original deer for the Waterford herd. They were owned by a neighbor of his at Dundas.

The Honey family has long been associated with public life. Mr. Honey was





first nominated for the council of what was then a village in 1932. "I almost refused as I didn't intend to stay here he said. "I sat on council for six mon and hated every meeting."

But he stayed and five years later wa warden of Norfolk County. He becan leader in the dairy industry and spenseveral terms as president of the Contrated Milk Producers' Association of Ontario. A keen pianist, he says with some pride that he's played for association sing-songs in every Canadian probut two.

Council, public utilities commission, conservation authority meetings, Lior Club... the responsibilities grew. Th strong political tradition in the family His brother-in-law, W. H. Taylor, retirecently from the Senate. He served a Liberal whip under Mackenzie King.

Now Mr. Honey is slowly backing opublic life. One by one he's relinquishis offices. "For one thing, I've beer down with a heart attack," he said. doctor prescribed three things: plen, walking, keep my weight down and myself to a pack of cigarettes a day.

"It's the walking bit which has more less made up my mind to tame anoth fawn. I'm going to catch one, only time I think it will be a doe. It will be harder to raise because they're more nervous, but I think I can do it."

And with that Wilton Honey, council commissioner, former county wards above all, animal lover, turned back feeding blue grapes and apple slice his favorite deer.

Fully-grown specimen accepts candy from Mr. Honey, but others in the herd are less to





The Village of Fenelon Falls in the heart of I Ontario's beautiful Kawartha Lakes district is a study in contrasts... shells of century-old mills and television antennas, woodburning stoves and electric heating. Samuel de Champlain passed this way more than I 350 years ago, leaving an autograph etched in stone and blazing a trail now followed by weekend boating buffs and other summer visitors.

Situated on the Omemee River, the historic village derives its name from the 20-foot plunge taken over a limestone cliff by the waters of cottage-studded Cameron Lake before continuing the half-mile run to Lake Sturgeon.

The banks of the fast-flowing stream provided ideal mill sites for early settlers. Grist mills, flour mills and lumber mills sprang up. Stones for the community's original grist mill, constructed in 1841, were brought in by horse-and-sleigh from Toronto, a winter trip of more than 100 miles over wilderness roads.

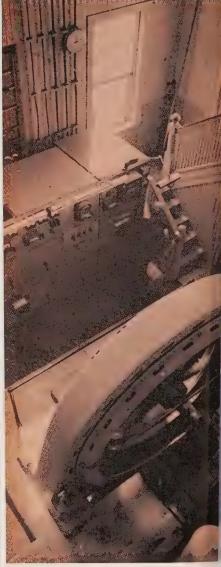
The mill was torn down a decade later and separate grist and sawmills erected on the site. That same year, the first steamboat to ply the Kawarthas, the Woodman, arrived from Port Perry on her maiden trip, launching a lumbering trade that would prosper for 35 years.

Water wheels turned the machinery of the early mills, and these same wheels drove the generators that provided Fenelon Falls with its first electric power. Old timers recall the arc lights that were the boast of the village around the turn of the century, though they'll admit it was advisable to sacrifice pride to discretion and take along an oil lantern when venturing out on moonless nights, "just in case."

From the beginning, Fenelon Falls had been the upper terminus for navigation on the Kawarthas. But the village began to decline as an important factor in lake trade about 1886 with the completion by the federal government of the original Trent Canal. This consisted of two locks and a short canal blasted through the steep limestone cliff to the north of the falls to make the upper lakes accessible. Some people recall that the workmen setting dynamite charges showed considerably more enthusiasm than finesse so much so that it was not unusual for life, limb and property to be endangered by showers of rock and other debris.

But the dynamiters made their contribution. Long-time village residents such as Alec





Northey, who worked as a surveyor later canal construction and served village treasurer for 15 years, believit early construction men were literally blasting an economic future for the serverse of the serverse serverse.

"The village has very little industry of says Mr. Northey, "only a few woo products factories. What the canal away at first is now being returned times over by summer cottagers an tourists."

Ontario Hydro's Area Office in Fen of Falls serves 7,865 customers, many them cottagers.

The term "summer cottage" is because something of a misnomer in the Fealls area. Most new cottages are left year-round living and many existing structures are being winterized. The

Swift-flowing waters of the Omemee River, far left, pass by defunct generating station and still power village-owned plant, as interior shot shows. Below: the Fenelon Falls of another



elopment is largely attributable to tric heating. Power in the village itself ovided by a plant owned and operated he Fenelon Falls Water, Light and yer Commission, supplemented by gy from Ontario Hydro.

Plon Falls became a Hydro municipality rear following a plebiscite. The vote an overwhelming 240 to 17. Before plebiscite, the village augmented the ut of its own plant with power pured from Ontario Hydro without a all agreement.

ricity bought from Hydro in 1966 cost illage \$42,897. The decision to join lydro system saved nearly \$3,000 in rst four months of the contract. The Fenelon Falls commission is an elected body consisting of Chairman R. N. Tyndall and commissioners Lorne Bailey and the Rev. James B. Harrison, who is also reeve. They had 883 customers as of December, 1967, of which 746 were domestic, 132 commercial and five power. Cottage customers on the village list number nearly 150.

Fenelon Falls has owned and operated its own generating station since 1903. Located on the north bank of the river, the present 500-kilowatt plant replaced a smaller privately-owned station on the same site. Another privately-owned development, built on the opposite side of the river, was sold to Lindsay in 1903 and was that community's source of electricity for some years.

Lindsay's demand eventually outgrew the plant's capacity and the town turned to Ontario Hydro for supplementary power. Hydro took over the station, but later closed it down as uneconomical.

The plant, which along with river-flow rights was sold to Fenelon Falls for a token sum, now stands deserted not far from the spot where Samuel de Champlain paused to carve his name. Champlain was en route to Lake Simcoe after a foray with a war party of Hurons into Iroquois territory to the south.

The historic signature is now below water level, but Clarke Truax, chief operator of the Fenelon Falls power station, says it is there. He saw it many times years ago



Alec Northey . . . tourists hold the key

when the water level was much lower, the pickerel more plentiful, and skeptics could be confronted with the evidence.

Champlain arrived on the scene a few centuries too early to avoid the back-breaking portages on the return trip from Georgian Bay to Lake Ontario. Today he would have little trouble — except possibly for traffic jams — thanks to the Trent Canal. In reality, the canal is a series of rivers and lakes that by a system of dams, locks, short artificial channels and a marine railway makes the passage from Trenton to Honey Harbour a playground for pleasure craft of every variety.

The old canals and locks built around the turn of the century have long since been refurbished and enlarged. Pride of the Trent system now is Lock No. 21. Bordering the city of Peterborough, it is the world's highest lift hydraulic lock, capable of raising a vessel 65 feet in about seven minutes.

Locks on the canal system, which is operated from Peterborough by the Federal Department of Transport, are electrically controlled. Maintenance of water levels in the lakes makes the system a major factor in flood control over a wide area. Rounding out the picture are the hydro-electric stations along the Trent system that year after year contribute a not inconsiderable amount of power to the Ontario Hydro system.

While considering how much Champlain might have appreciated the canal system to get him around Fenelon Falls back in 1618, consider also that had there been such a system he probably would not have had time to sign his autograph. And that, even under water, would have been a loss to posterity.



puzzle of the petr



Three prospectors were tramping the the semi-wilderness of the Kawarths country not far from the Trent water when they discovered an amazing goof surrealistic art.

On a crystalline limestone slope covquarter of an acre, they discovered than 300 rock carvings ranging fror surrealistic dream figures to striking likenesses of animals, birds, fish, rerand canoes.

Controversy has raged since the disc in 1954 of what became known as Peterborough petroglyphs. It was speculated that the carvings dated 3,000 years to the Laurentian era. It an anthropologist and his wife feel petroglyphs may be only 400 years

Anthropology professor Ronald Vasik of Trent University, and his wife Joha professor of Fine Art at the University a professor of Fine Art at the University and professor of Fine Art at the University as a professor of Fine Art at the University as professor of Fine Art at the University as a professor of Fine Art at the University and professor of Fine Art at the University and professor of Fine Art at the University and his wife John School of F

The Vastokases discovered several abraders used by the Indian artists gouge the soft rock. Some small stof pottery were also unearthed.





phs



The couple feel that the carvings were made in two periods over a 200 to 300-year time span. The later, deeper, bolder motifs were superimposed on older designs of more precise line and finer contours. The subject matter is similar in both styles.

The Vastokases are currently preparing a detailed analysis and full interpretation of the rock carvings from hundreds of new photos and other related field data. They are placing particular emphasis on relating the carvings to other instances of Indian rock art in the region of the Great Lakes. A comprehensive report will be published next year.

While the Ontario Department of Lands and Forests has erected a high wire fence and an elevated viewing stand at the carvings site, the Vastokases are concerned about continuing erosion of the soft limestone rock and public defacement of it.

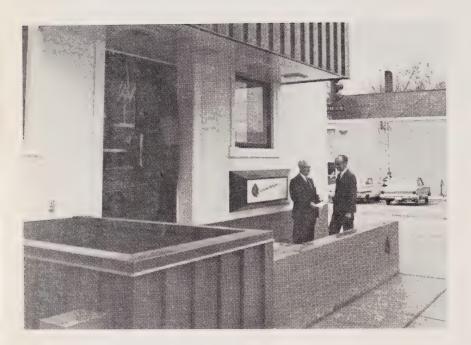
Joan Vastokas brings a woman's perception to the petroglyphs. She feels all visitors "must be moved as I am by the beauty, seclusion, quiet and mystery of the site."

The carvings are accessible by the 15-mile timber access road that runs between Apsley and Nephton through the Peterborough crown game preserve.



From red-brick post office, right, to Hydro administration centre in only a few months. And to make it official, Ontario Hydro Chairman George Gathercole and Richmond Hill Hydro Chairman W. Sam Cook snipped the ribbon with an electric knife.

swee o



Latest to don a new party dress amo utilities bordering Yonge Street is mond Hill Hydro, which has just opnew administrative centre. Its neighbor April.

Located in the heart of the town's ness section, the new offices have dressed in white and avocado, successive hiding the fact that the original because on the wrong side of 30. Even one familiar with the area would trouble recognizing it as the post which served Richmond Hill from to 1960.

And what makes the project more tive to a cost-conscious utility is the The building was purchased, the and interior modernized and electring installed for only \$82,000.

As Chairman W. Sam Cook says replacement value of the office build land is estimated to be about \$200.0

Ontario Hydro Chairman George Cole, who snipped the ribbon, paid to the astuteness of the commission





ass ichmond hill

k, William Wagner and Mayor Tom adhurst — in purchasing the building. addition to their regular jobs, your esentatives are pretty shrewd horseers," he said.

all came about last year when it became arent that the town urgently needed be space occupied by the commission he municipal building. At the same, the federal government had declared post office building surplus, so the mission bought it for \$25,000. Renoon work began and the administrative of the Hydro operations moved into new quarters in March.

chmond Hill Hydro is just a fledgling tilities go. It was born only 11 years but its growth over those years has a outstanding. The number of cusers has risen from 2,900 to 5,500 and rearly consumption has tripled to stand million kilowatt-hours.

r. Gathercole pointed out that despite spward trend of electrical rates, the age cost of a kilowatt-hour to resiial customers had declined about 17 cent since the utility was first estabd. Last year, a typical resident paid 20 for power, or about 25 cents a day. e same year the commission came into g, the community turned from its vilstatus, which it acquired in 1872, to me a town. When it was incorporated e last century there were only 900 ents. Today there are close to 20,000. e has to go back to 1819 to find the n of the town's name. It was in that that the Governor General, the Fourth of Richmond, visited the settlement. ark the occasion, residents changed ame from Mount Pleasant to Rich-I Hill and adopted the duke's crest motto, "En la rose je fleuris" (In the flourish).

1912, the town raised \$5,000 in tures to install an electric light plant. om 1925 until the local commission's tion, Ontario Hydro looked after the junity's electrical needs.

to a few years ago, the town was a



commercial centre for market gardening. Today, there are still farms and wide open spaces surrounding the town, but it is also a rapidly growing industrial centre. Two firms, Texas Instruments, which manufactures precision temperature control devices, and Ronalds Federated, a directory printing firm, vie for the title of largest employer.

Like most of the other firms, they moved to Richmond Hill as the town took on the mantle of suburbia with many of its new residents working in Metropolitan Toronto, just a few miles to the south.

The town's products are varied and include snowplows, processed onions, heating cables, perfumes, steambaths, mushroom spawn and ladies' slippers. Mayfair Manufacturing, which was established in 1935, turns out dresses and other ladies' wear.

As part of the new look on the inside, the building was stripped of plaster. Rigid insulation was installed on the walls and loose insulation in the roof. Windows were restructured, integrating blinds in their double-glazed style. Exterior brickwork was painted white and an avocado canopy installed over the main entrance.

On the main floor there is a large general office, a display area and an office for Brydon Ellis, secretary-treasurer. Apart

from a spacious boardroom on the second floor, 750 square feet of space has been rented out until it's needed for future expansion. The billing and records room is bright and modern despite its basement location, which minimizes machine noise. The rest of the lower level has been set aside as a meeting place for the local Boy Scouts.

A heat pump provides both heating and cooling for the building. Baseboard convector heaters have been installed in the basement and rear hallway. Auxiliary heating is also installed in the heat pump and an overhead blower at the front entrance will come into play under extreme conditions.

While Mr. Ellis and his administrative staff of six take care of the facts and figures, Superintendent Al Horwood and his nine men look after the nuts and bolts side of the business. They work out of a new service centre on Newkirk Road. In the six-vehicle fleet are a line truck with corner-mounted auger and hydraulic 40-foot boom, a water heater service van, a ladder truck and three general-purpose pick-ups.

With two new buildings and a staff double what it was in the beginning, the Sweet Lass of Richmond Hill is fast becoming a lady of some maturity.

seeing the sites

district 8 omea tours lambton

Increased research into ways of transmitting electric power through space "to eliminate costly transmission lines" was urged by District 8 OMEA president John T. Barnes. He told delegates that such a breakthrough might help solve the problem of rising costs for electrical utilities.

Speaking at Sarnia, Mr. Barnes predicted that OMEA district meetings would become technically oriented, probably taking the form of workshops. "The administration of Hydro affairs is becoming more complex and less routine," he added.

The 90 delegates, who were attending the first spring meeting to be held by the district, revised the constitution to define the structure and duties of various committees. But a proposal by Mr. Barnes for a permanent district secretary-treasurer was defeated.

Mr. Barnes said that a permanent office would add continuity to the executive and help new officers to avoid mistakes. However, Mayor Joe Young, of Tilbury, said that the permanent appointment would eliminate one area where members could gain experience. Mistakes could be avoided by reviewing actions in preceding years.

Turning to the "Tell the People" public relations program, delegates were told not to think it was intended to promote Ontario Hydro. "We're promoting ourselves," said

Mayor Young, who is chairman o district PR committee. "If the side helps Ontario Hydro that's OK, but it's a side effect.'

He reported that the "Accent on Se pamphlet with its return mail question had received good response in Ti with a 20 per cent return of cards. M the returns reflected satisfaction with service. Cost was only \$150 for customers.

Windsor commissioner Eric Durance the return to his utility was only in the to three per cent range.

Mayor Young said the committee studying the feasibility of holding relations sessions at two or three c in the district. He felt it would be r well spent.

On behalf of the Bursary Comr Guy Morrison, of Chatham, reported was no interest in educational aid alt all schools and boards of educatio been notified of its existence. A bur assigned each year to a student in the three counties in the district! year is Kent County's turn.

Ontario Hydro Chairman George & cole, the guest speaker, also touch public relations. "Public relations ha worked on all the time and isn't som to be invoked at times of crisis," he

After lunch, delegates travelled by Lambton generating station under struction south of Sarnia, where guide was construction manager Estey. The 2,000,000-kilowatt stati deliver first power next January.





The first-ever District 8, OMEA spring meeting was a wellattended affair. With smiles all around are H. J. Donais and Mayor Joe Young of Tilbury; Ontario Hydro Chairman George Gathercole: District President John T. Barnes; and Cec Rivard of Tilbury.

Hard hats were the order of the day as District 8 delegates toured Lambton generating station near Sarnia. First energy from the four-unit power plant will be produced in January.

strict 5 views anticoke model

main topics came into discussion at District 5 OMEA meeting at Port Dover. were the Nanticoke generating sta-, now under construction east of Port er, and the Smith Report on Taxation. n hand to give the 80 delegates an rmed look at the taxation question John Dixon, of Clarkson, Gordon Co., and J. M. Jamieson, Ontario ro manager of financial analysis. Mr. on, whose firm audits Ontario Hydro's ounts, outlined the report's recommenons and compared it briefly with the er taxation report at the federal level. Jamieson pointed out some of the th Report's implications for the provinand municipal utilities.

Revolutionary", was the way the audiermed the Carter Report, which would by replace the present tax system with a approach. He said that the Smith roach was to modernize and improve present system.

nder it, property tax would remain the or source of revenue of local governts, but with revisions such as the cashelter grant which went into effect the first of the year. School taxes at the icipal level would be reduced and a broader base for the retail sales established.

though there were many revisions

recommended by the Smith Report, said Mr. Dixon, business in the province would continue to bear the load.

Mr. Jamieson said the tax committee regarded Ontario Hydro and the municipal utilities as being equal to the investor-owned utilities. "But they have different objectives and responsibilities," he added. Their financial structures are different and the conditions under which they operate are different.

"How do you compare an organization of the nature of Hydro, which makes the benefits of electric power almost universally accessible over the province, with a privately-owned utility, which is free to select the markets in which it will operate, and is inevitably attracted to those markets that are most profitable?"

Mr. Jamieson said amendments to the Power Commission Act recommended by the Smith Report involved departing entirely from the original concepts behind the creation of Ontario Hydro and the basis of its operation.

"Linked with the proposals of revising the basis of billing power is the recommendation that Hydro be subject to income taxes. If income taxes were payable, such taxes would, of course, be a cost which would have to be recovered in the cost of power," he said.

Turning to property tax, Mr. Jamieson said the committee stated that the utilities and Ontario Hydro now enjoy partial relief from taxation in comparison to privately-owned counterparts since they pay no tax on transmission and distribution lines

along highways or other public places, whereas the privately-owned utilities do. The committee proposed that Hydro and the municipal utilities pay tax on these structures. However, to offset this, land owned by the public enterprises on which these same structures were located would be exempt from taxation.

Turning to Nanticoke generating station, which is due to produce first power in 1971, delegates heard Henri Teekman, a senior planning engineer with Ontario Hydro, outline the necessity for building a thermal plant and the work leading up to a final decision on a site.

The entire shoreline from Fort Erie to Sarnia was surveyed in the search for a site for the 2,000,000-kilowatt station, said Mr. Teekman. A long list of ideal conditions were met by the Nanticoke site. "I think it is the best on the entire shoreline," he added.

Mr. Teekman said that a multi-flued chimney will rise 650 feet to guide effluents high into the atmosphere. The single chimney will take gases from all four units and will ensure better dispersion than four separate stacks.

In other business, Lorne Reeder, of St. George, was made a director replacing Gordon Robertson, who had resigned. Delegates were also told that a budget for public relations had been approved and that John Dawson, of Dunnville, had been made chairman of the District 5 OMEA-AMEU PR committee.





Warm weather brought District 5 OMEA delegates outdoors at Port Dover. Chatting are Mayor Alf Judd, Simcoe; District President Arthur Bennett, John Dixon, of Clarkson, Gordon and Co.; and Ian Stubbs and J. M. Jamieson, both of Ontario Hydro.

Looking over a scale model of the Nanticoke generating station, which is under construction east of Port Dover, are Wilton Honey, John Honey and Cliff Hare, all of Waterford. A single chimney will serve the station's four units.



The atmosphere in the Ontario Hydro system control centre at Richview in Etobicoke is relaxed. System operators sit in their shirt sleeves inside a softly-lit circle. They're clock watchers, every one. But that's part of their job.

On the wall, a mass of telemetered information gives them a composite picture of the supply and demand for power throughout Southern and Northeastern Ontario. Special clocks record time to a fraction of a second. Occasionally, someone jots down a few readings. Or he may reach for the phone and speak quietly to a counterpart on some other system, perhaps in Quebec or New York State.

Suddenly, the heat's on. Phones shrill. It's trouble — as yet undefined — along a stretch of 230,000-volt line between Chatham and Wallaceburg. Already, the men in the control room are calmly performing long-practised routines, adjusting generation and summoning additional power to ensure uninterrupted service.

It's the sort of emergency that could, and does, happen anytime. But system operators will be even better prepared next year when a \$10 million microwave installation is placed in service to keep watch over a large slice of the province's power network.

The microwave system will be manned from a separate control room at Richview. Its operators will work in close contact with the power system operators and with maintenance technicians on 24-hour stand-by in the field.

Primarily, the new system is a protective device. Its main job is to pass information at the speed of light between sensitive relays. A power fault on a transmission line will cause relays at one end of the line to open circuit breakers. But to isolate the line, relays at the other end must simultaneously open circuit breakers there.

The microwave system will perform in vital function as well as carrying charger to voice communication and monit data from generating and distribution stations. In so doing, it will replace the existing communication system operations to the transmission lines themsels.

The existing system is nearing its lit because of the rapid expansion of particular facilities in Southern Ontario and the limited number of frequencies available the power line carrier. Ontario Hyd spent about a year drawing up the design for the new system. Detailed design and the actual installation is undertaken by the Lenkurt Electric Company of Canada.

Basically, the microwave network valued into a series of closed ring. First ring — embracing London, Change and Sarnia — is due to be completed June, 1969. The sixth and final ring should be operating in the Toronto by the end of 1969.

use



actually, this ontario hydro microwave system will be one of the largest and most sophisticated power protection networks in the world

call for the construction of 40 wave stations. The towers will range ight from 20 to 350 feet and will tand winds up to 150 miles an hour. antenna will be electrically heated to nt ice from building up.

als will be transmitted continuously at requencies and in both directions and each microwave ring. This will give rotective equipment a choice of ifferent channels. It will automatically the strongest signal.

from keeping constant vigil over a le network of high-voltage lines, ex electronic equipment will also he 770-mile microwave system reporting any malfunction instantly o Richview control. Information on thus of the microwave system will relayed to three regional control at London, Burlington and Barrie.

Computer-type circuits will check 28 different functions throughout the system. The equipment will be powered by 48-volt batteries, enabling communications to be maintained for eight hours in the event of an interruption to the normal power supply.

"Other electrical utilities have installed protective microwave systems, but this is the biggest of which I'm aware," says Hydro's senior communications engineer Bob Elliot.

Remote control is nothing new to Ontario Hydro. Many isolated hydro-electric stations, particularly in the northern part of the province, are operated entirely by means of radio signals beamed from a central control point. The Little Long, Harmon, Kipling and Otter Rapids stations in the Moose River system, for instance, are all operated from up to 30 miles away at Pinard transformer station.

The new system will not operate any power stations, but it will improve the protection, control and data-gathering systems over a large section of the Southern Ontario power grid. And for Canada's most highly industrialized area, this will mean improved service and a reduction in the likelihood of serious power outages.

More than 400 electrical utility executives across the province gathered at Niagara Fa

of the Association of Municipal Electrical Utilities. But it wasn't any honeymoon.



Bill Whitehead, Ontario Hydro



H. E. Brownhill, Niagara Falls Hydro



J. R. Philips, OMEA president, and F. L. G. Askwith, AMEU president



Jack Anderson, Leamington PUC

on the level

Voltage levels came in for a detailed from a three-man panel consisting of Hicks, Toronto Hydro, E. M. Mackay tario Hydro, and J. K. Fee, Kingston

Mr. Hicks outlined what cust should expect in the way of voltage Mackay talked about the voltage stars Ontario Hydro would provide and N stressed the utilities' part in sup good voltage.

The first speaker told delegate: consumers don't understand what tricity is - but they know what they from it. "They want it to keep their bright, their champagne cold anch water hot."

Voltage variance at the service era should be a narrow band to balan? things like longer life for bulbs at p voltages and greater efficiency from tors at higher voltages, said Mr. Hic; mentioned a range of 110 to 125 vi

Mr. Mackay said that Ontario Hycl set voltage standards for many year only recently had published the municipal utilities. "Growth in the family and increased needs for goil tage have made it desirable to common established standard for

Mr. Fee suggested that utilities In have a system of voltage control. recorders should be used in areas V customers complain.

To round out the session, he presit mythical voltage problem on a line in several customers in Kingston.

Another panel, this time consists six members, gave their views design and planning of electrical st from a security of service standpoint fielded questions from the floor.

egates had little chance to daydream. st sessions had built-in time for questions in the floor and a preponderance of panel cussions invited participation from both es of the microphone.

h the theme "Accent on Service", the sions were of a highly technical nature.

The conference was split into three, the association's marketing board putting on one section and the engineering board another. The proceedings wound up with the annual meeting of the Electrical Utilities Safety Association.

ss of life ved girl

light of the Electrical Utilities Safety ciation meeting was the presentation meritorious action award to Charles ord, of Port Colborne Hydro. The gest man on the utility's staff, 21-old Mr. Danford applied mouth-to-h resuscitation to six-year-old Allison ar, who had been pinned by an autogarage door.

and Frank Onda, who received a of commendation for his assistance, working nearby at the time. Mr. ord, who is from New Zealand, had yed resuscitation training as part of tility – EUSA safety program.

L. Tron, Pembroke Hydro's general ger, was elected president at the ng. Other members of the executive H. W. Little, Brockville PUC, past dent; W. R. Pfaff, St. Catharines vice-president; H. G. Flack, manager ecretary-treasurer. Directors: Dr. C. I. n. N. A. Grandfield, J. K. Fee, W. M. B. G. Kirstine, N. H. MacKinnon, Miller, E. Ounpuu, C. S. Phelps, Powell, H. J. Schmidt and J. A. nce.

R. Davis, general manager of Kingston received a service award for his 13 on the EUSA board of directors and ear as president. It was accepted on shalf by J. K. Fee.

watt is cooking?

Martin Pask, Ontario Hydro market planning engineer, brought delegates up-to-date with a presentation entitled "Watts cooking in today's commercial food service market."

He said 27 per cent of the food dollar of the upper income family is spent eating out in comparison to an overall percentage of 18. Society is growing more affluent with ever increasing amounts of disposable income.

"What," he asked, "are we doing as an electrical utility to reap the benefits of this change? Are we increasing our sales efforts? Are we increasing our promotions? Are we preparing ourselves to attack or even defend this windfall with all means available to us?"

Mr. Pask said that many utility representatives call on food service people to sell them on the advantages of electric space and water heating, but he wondered whether they knew what kind of equipment was used in the kitchen. Electrical cooking equipment could solve many of the restaurateur's problems — rising costs, lack of skilled labor and service time. And without particular effort on the part of utilities, the electric-to-gas split had grown to about 60 to 40 per cent in favor of new electrical equipment sales.

In the long-range marketing program for commercial electric cooking, 1968 is stage one, he said. During the year, utilities will conduct a survey of the market, finding out just where it lies. It will also, said Mr. Pask, be a year of letting the restaurateur know that the utility is there to advise and help him.

centennial baby is a bouncer

Being born the same day as the nation marked its Centennial was an omen for the success of the Co-operative Marketing Plan-Essex County (COMPEC) said Jack Anderson, manager of Leamington PUC.

Mr. Anderson said that the idea of a co-operative marketing plan for utilities wasn't new. "But this is the first time to our knowledge that such an arrangement has been undertaken on such a grand scale," he added. The plan involves 32,500 customers, almost half of them located in 12 municipal utilities ranging in size from 250 to 3,500 customers.

The 12 are Amherstburg PUC, Belle River Hydro, Comber Hydro, Essex PUC, Harrow Hydro, Kingsville PUC, Leamington PUC, St. Clair Beach PUC, Tecumseh PUC, Wheatley PUC, Cottam Hydro and Sandwich West Hydro. Customers served by Ontario Hydro's Essex Area also come under the plan.

Although utility managers had already agreed on the need for a plan, the first formal step was a request by the Leamington commission for Ontario Hydro's Western Region to investigate the feasibility of increasing its regional staff to cover both rural and municipal sales needs. Agreement was reached in April, 1967, and signed to come into effect July 1.

Then the work began for the six-man advisory committee.

"These fellows were convinced that the only way to make COMPEC work was to abolish the chaotic multitude of local promotional policies throughout the county in favor of a single policy that would apply across the whole area. The most serious problems were in the field of water heating and space heating and these they tackled first," said Mr. Anderson.

The committee settled on two water heaters, the 60-gallon Cascade and the



AMEU President Lloyd Askwith is flanked by hosts H. E. Brownhill, Niagara Falls Hydro manager, and Mayor F. J. Miller, Niagara Falls.



Newly-elected EUSA President J. L. Tron, centre, smiles his approval of life-saving awards presented to Charles Danford and Frank Onda.

Cascade 40, with the emphasis on the 60. There is a trade price, a retail price and an installed price for each. A standard rental charge and a uniform time payment charge including maintenance are part of the package. The time payment is stressed.

It took six months to thrash out the one policy. "But," said Mr. Anderson, "it was vorth it. Our allies, the plumbing and electrical contractors in Essex, have told

It was the same story for electric heating with a myriad of incentives. All of them were rescinded in favor of just one carrot free underground service, whether it is a new custom-built home, a conversion home or a whole subdivision.

What were the results of the first six months of COMPEC's operation?

'Last year, electrical utilities in the area captured 32 per cent of the heating market for new homes," said Mr. Anderson. "Taking into account the whole area, 273 allelectric homes were built and another 73 converted to electric heat.'

This year COMPEC is pushing ahead on uniform rates, with nine of the 12 scheduled for change by the end of the year and the other three in 1969. They're also shooting for electric heat in 40 per cent of new homes built. Further systematic surveys of customers will be conducted with emphasis on water heating.

The group, along with Ontario Hydro, is sponsoring a breakfast-time newscast five days a week on Leamington's radio station.

And finally," said Mr. Anderson, "we plan to offer our services, advice and guidance to any other location in the province where local people feel that a COMPEC-type marketing plan would be advantageous.'

understanding the need to sell

For a man who admits he didn't know anything about sales and marketing until a few months ago, Bill Whitehead certainly gave AMEU members plenty of food for thought. The knowledge was attained by the Ontario Hydro personnel officer in a four-month study of the field, which included more than 300 interviews.

Paramount among the problems cited by Mr. Whitehead was the matter of staffing. It was one of "insufficient sales staff and an apparent inability of some managers to sell their commissions on the advisability of hiring additional people to look after the marketing function'

There was also a problem of staff selection, he said. In the early years of sales and marketing there seemed to be two main criteria for selecting staff — was the man surplus and was he mentally or physically infirm?

"If he possessed one of these criteria his chances of being a salesman were good. If he possessed both, however, he might even be supervisory material," he joked.

Mr. Whitehead said many utilities had a very serious problem: they didn't understand why they were really in sales and marketing. In some cases, they didn't understand the marketing function itself.

Turning to training, the personnel officer said his study revealed that managers feel the frequency of training for themselves is too heavy. They would rather back off the once-a-year sessions to every second year and concentrate the yearly training on their salesmen. Not that managers think they know everything in the marketing area, he hastened to add, but rather that they can't afford the time involved.

Commenting on time spent on training in general, Mr. Whitehead quoted one

manager: "I've got a utility of three. One is going to courses, another is from courses and one is working. times the size of the one working fr me.'

Little or no planning of staff devel programs was found to exist. Pari responsibility must fall on those courses in the past. Each course ha virtually self-sufficient, he said, w attempt to design them so that on another, thereby gradually increase overall level of sophistication.

"Isn't it odd," he remarked, ". readily accept the principle of plar. applied to our physical resources, b we come to our human resources, difficult to accept this same prince

Looking to the future, Mr. WIE said the most useful role of the group would only be fulfilled if it la operate as a "training consult would be expected to cite training tives from which a manager coul the best course for his staff.

lineman trainir:

Bruce Prentice, of Toronto Hydro, I some of the criteria for setting up an training program under the AMEU power Planning Committee. Idelly said, trainees would be between 1 a years old, have six months on the pl a Grade 10 education. The training which had been "borrowed" fron Hydro, concentrated on manual KI first. "He must have these skills i le go on to theory later," he added

Mr. Prentice said a system of Int tion will be set up later.



scade — for short

of the best-known water heaters on the market is having its shortened. In electric water heater advertising, the "40" be phased out of the name "Cascade 40".

ople are using more hot water at a greater rate than was ipated in 1963 when it was decided to standardize on a allon tank with a 3,000-watt upper and 1,000-watt lower ent. For this reason, specifications have been written and oved for a 60-gallon tank with 4,500-watt upper and 1,500-minimum lower elements. This unit will be known simply a "Cascade".

curvey has shown that the product identification will not be tred by dropping the figure. If an even larger tank with larger ents is needed in future, the problem of the figure will not be inceed.

st in 15 years

rio Hydro has announced an increase in rates to its 500,000 customers — the first general increase in 15 years. The new will be reflected in bills mailed on and after October 1.

eincreases will vary from customer to customer according to fication and the amount of energy used, but the average e 9½ per cent. During the 15 years, adjustments have been vely minor. The last was in 1966 when 173,000 customers yed decreases and 165,000 increases.

er explaining that the higher rates were a reflection of the rd trend in equipment, wages and borrowing rates, Ontario Chairman George Gathercole said: "Our rural system ted at a deficit last year and an upward adjustment of rates vessential."

estimated that the increases would barely meet rising costs, hould carry Hydro through the next two years without radjustment. A detailed explanation of the changes is mailed to all rural customers.

rt of the canyon

nonth was a big one for the 450 residents of Abitibi Canyon, iles north of North Bay. Years of planning were culminated opening of the Canyon Community Centre and its dedication of the Varian George Gathercole.

ong Ontario Hydro executives attending the ceremonies First Vice-Chairman D. P. Cliff; Commissioners Lt. Col. Kennedy and Ian F. McRae; General Manager Dr. J. M. ey; Omer S. Russell, assistant general manager-personnel, en Candy, commission architect. Ab Hayman, retiring astern regional manager, and his successor, Ed Flinn, also

attended. After the opening, they toured the building and joined residents for a buffet dinner and dance.

The centre affords modern and complete accommodation for recreation and relaxation for the residents of the all-electric Hydro town. The community is home to workers charged with the operation of some of Hydro's northernmost generating facilities.

The new building has about everything — hockey and curling rinks, gymnatorium, swimming pool, bowling alleys, billiard room, library, restaurant, barber's and hairdressing shops and hobby rooms.

New director

George R. Currie has been appointed director of consumer service for Ontario Hydro. He succeeds Donald B. Ireland, who was recently appointed executive managerregions.

For the past 16 months, Mr. Currie has been consumer service and sales engineer in Hydro's Central Region.

In 1937, armed with an electrical engineering degree from the University of Toronto, Mr. Currie became a student

engineer with Hydro in the Sarnia rural power district. After a number of moves he was made assistant manager of the Ottawa Area, then moved to Hydro's head office as junior engineer in the municipal engineering department.

After serving in the second world war, he was made assistant municipal engineer and in 1948 appointed Western Region's consumer service superintendent. He subsequently became rural service superintendent and then rural service engineer at head office.

Mr. Currie holds a Business Administration degree and is a member of the Association of Professional Engineers of Ontario and the Electric Club of Toronto.

What a nut!



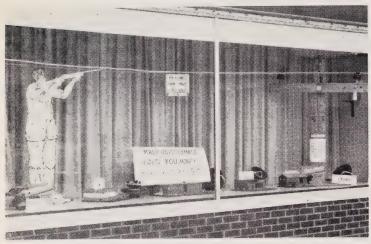
Oh, for a wrench

When something as huge as Ontario Hydro's Lambton generating station is being put together, big components are to be expected. But it's doubtful whether any plumber or mechanic would have a wrench to fit this nut and 15 more like it that anchor the huge boiler steam drum 195 feet above ground level.

The 243-ton drum, which perches above the boiler, separates water and steam at a temperature of 668 degrees and a pressure of

2,500 pounds. The first of four generating units will go into service early next year at the 2,000,000-kilowatt station, located south of Sarnia.

Don't shoot



Prevention, their aim

Public information plus public co-operation equals public security and economy.

That's the formula being used to combat malicious damage in Ontario Hydro's Georgian Bay and Northeastern Regions — and it's working. Over the last 12 months, there has been a 50 per cent reduction in vandalism.

As part of the campaign, the above display has been making the rounds of area offices in Georgian Bay. So impressed was the Department of Lands and Forests, that it incorporated the display in an exhibit at the Barrie Sportsman's Show. The two regions also hope to have an 8 mm. movie ready for showing before the fall hunting season.

Accounting — eastern style

Problem solving, pensions, employee training and even football got a good going over last month in Kingston. The occasion was the seventeenth annual meeting of the Eastern Ontario conference of the AMEU's Accounting and Office Administration Section.

The 110 delegates heard D. C. Aird of Ontario Hydro describe methods of solving problems. Mr. Aird, who heads a group in Hydro's Design and Construction division, said that his men take the view that "everything is a problem". There isn't anything being done that can't be done better is the philosophy the group follows.

N. H. MacKinnon, Sudbury, explained some of the activities of the Manpower Planning Committee that he heads, and talked about training in general. In other sessions of the two-day meeting, Dr. R. H. Hay, chairman of Kingston PUC, spoke about what commissioners expect of administrators, C. H. Witheridge gave a talk on the Canada Pension Plan and D. A. Patriquin, Ontario Hydro, showed a film and talked about communications and customer relations.

Football was on the dinner menu, with guest speaker Tony Golab, general manager of the Montreal Alouettes and a star of another gridiron era, taking the delegates on a nostalgic trip back through the history of the sport.

Officers heading the division for the coming year, with the 1969 conference slated for Smith's Falls, include: T. W. Elson, Barrie, chairman; D. B. Best, Peterborough, vice-chairman; G. D. Chambers, Gloucester, secretary-treasurer; J. H. Borrowdale, Oshawa; J. C. Fooks, Kingston; R. D. Wright, Ottawa; Richard Symonds, Port Hope; and Robert Burbidge, Ottawa.

Roles reversed

About 40 vocational school teachers, including one lady, purigorous two weeks recently in the role of students. They learning about the technical aspects of electric heating, vand lighting from specialists of Ontario Hydro's Central Rethe teachers, all from Metro Toronto high schools, recertificates after passing an examination. This will enable to instruct young people who have wanted such subject their curriculum.

Waste not

A new Canadian firm — Enercon Ltd. — will soon be waste fly ash from Ontario Hydro's Lakeview generating s to make lightweight aggregate and other products for the struction industry.

Fly ash is a fine grey powder extracted from the coaplant's flue gases. At present, most of it is dumped.

A \$1.5 million pilot plant scheduled for late 1968 prod will be built next to the Lakeview station on the western ou of Metro Toronto. It will sinter the fly ash into aggreg replace sand and gravel in such pre-cast products as co blocks, slabs and panels as well as lightweight structural co for multi-storey buildings. Another by-product will be rilly ash, which can replace up to 30 per cent of the cement it making concrete. As markets develop, a concrete product is proposed opposite the sintering operation.

Similar plants may be built to process fly ash from other Hydro coal-fired stations.

municipal briefs

Orangeville Hydro is trying to interest neighboring util hiring a marketing salesman on a co-operative basis. The mission has concluded that although it needs a man to be use of electricity, it can't bear the cost alone.

When, like Mississauga Hydro, you're serving the bigges in the nation, you can expect big capital expenditures. For it has been pegged on the high side of \$7 million. One of expenses in the rapidly expanding municipality is extenditude distribution system — \$1.6 million is being spent on ground lines alone.

Once the world's tallest, two concrete hydro poles, built to carry power above the masts of ships in the old Welland are about to bite the dust. The 150-foot shafts have determined to be blasted from their foundations. It can be done to save them, says Ray Pfaff, manager of Sparines PUC.

From horse and buggy to the automobile is the way Gibbie, Oshawa PUC secretary-treasurer, described the consion's move from cash stub to computer billing. IBN centre in Toronto will be used initially, giving the PUC consexperience for the possible integration with a city hall conset-up around 1970.

In Leamington, a consultation with the PUC about converse electric heat is a real bargain. The utility has launched building campaign, and part of it involves sending out so letters to customers offering free advisory service about Customers accepting the interview have the opportunity of a \$22.95 study lamp for only \$4.95.

Five quarter-centuries of service to Port Arthur PU honored at a banquet recently. Gladys Blanchard, of the

rtment, received her Quarter Century Club membership from missioner Sam Ashton. Transit employees Frances Tamblin, rt Tebbenham, Leonard McFarlane and John Patola received from Commissioner Gordon Wilson.

ffer by London PUC to do the data processing for city hall have to wait until the city appoints an expert in the field. Chairman C. J. Ross and General Manager A. L. Furanna city controllers the commission has done its own data essing for 10 years. Mr. Furanna said the city would save by if the PUC did all the processing, including payrolls. At ent, the corporation engages a commercial centre to run 10 rams.

feminine touch has been added to Mississauga Hydro's omer relations program. Mrs. Pat Newlands has been inted customer relations assistant. She'll be responsible for rising programs and organizing meetings to foster customer ons as well as contacting builders, boards of education and cowners.

to the city at a price of \$66,500. It's phase one of the opment of a civic administration complex for the municipality is being integrated with the utility's consolidation of operator Counter Street. Later this year, a service centre will be oleted in the new location. The next step, expected in two or years, is the construction of an office building on Counter t. The downtown location will then be free for the civic elex.

houghts of taking over electrical distribution in Peel County Ontario Hydro have been shelved for the time being by a nal government committee. At a Brampton meeting, how-the committee decided to reserve the right to do so when rea becomes sufficiently urbanized. Says Chinguacousy e Cyril Clark: "At the present time we're better off with io Hydro. The cost of purchase and the interest would make tes more than we're presently paying." There are a number nicipal utilities in the county, but Ontario Hydro serves the areas.

v slate

ine districts of the Association of Municipal Electrical es have elected new men to head their local associations. I are the presidents and secretaries of the districts:

rict 1 (Eastern), W. C. Lewis, Ottawa; S. J. Dixon, Region, Ontario Hydro. District 2. (Georgian Bay), Robbins, Alliston; J. B. Morrison, Georgian Bay Region, io Hydro. District 3 (Thunder Bay), L. W. Oliver, Con; C. M. Nicholson, Port Arthur. District 4 (Central), Anthony, Scarborough; A. M. Durnford, Scarborough, ict 5 (Niagara), J. S. Wilson, Dundas; A. R. Turton. Ind. District 6 (Grand Valley), D. N. Durward, Galt; Boussey, Clinton. District 7 (London), T. A. Gagen, Con; K. C. Gerhard, Western Region, Ontario Hydro. District Clair), J. L. Sanger, Kingsville; R. A. Holliday, Western In, Ontario Hydro. District 9 (Northland), Bob Williams, Bay; G. B. Stroud, Northeastern Region, Ontario Hydro.

be heard, not seen

acre "total-experience" park for the blind could replace storey apartment building proposed for land across the from Toronto's Canadian National Institute for the Blind. newscaster Stanley Burke, a resident of the area, has the Ontario Municipal Board to postpone approval of the ent to give him time to marshal forces for the unique nic park. The land would cost \$500,000.

ould cost another \$100,000 to equip the park with art

forms to be experienced rather than seen. Textures, sounds and smells would be combined for sightless visitors and give them total immersion in a combination of art and nature. Sighted visitors could wear eye coverings to get the feel of the park.

Commuting by computer



Businessman's special

Westinghouse has come up with a system that may help break the love-affair between man and his auto. Called Transit Expressway, it evolved from a study of what the commuter wanted in order to leave his car at home — safety, passenger comfort, reasonable cost, and no waiting for transportation.

To test the concept, which is designed for medium-density routes, Westinghouse established a \$5 million demonstration system in South Park, near Pittsburgh. There, it provides service every two minutes, a smooth silent ride in electrically-driven vehicles and an exclusive right-of-way so that speeds of 50 mph and more are obtainable. A high standard of safety is achieved through computer control.

Cars on the South Park system are 30 feet long and weigh 18,000 pounds. In contrast, an average subway car weighs 60,000 pounds. The Pennsylvania project illustrates economical use at ground level, underground or elevated on single columns. Each car rides on eight rubber tires and front and rear axles are steered along a central rail by pneumatic-tired guide wheels. Two DC traction motors drive each vehicle.

Toronto is one of several cities that have shown interest in Transit Expressway.

Beauty spot

Sixty picturesque acres near Ontario Hydro's Eugenia generating station have been sold to the North Grey Conservation Authority. Included in the acreage are the falls, a park and a scenic gorge below the falls.

Hydro has maintained the area for the public since 1915 when the 4,800-kilowatt station was commissioned. Extensive rehabilitation of the dam was carried out in 1961. It restored the Eugenia Lake headpond to its former level.

The authority will install new park gates and try to repair a 60-year-old pump house damaged by vandals.

Useful waste

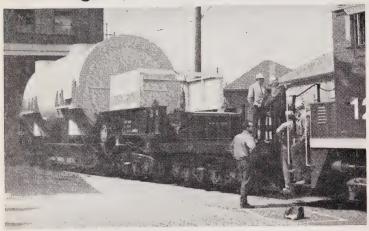
A process to utilize a by-product of coal-burning generating stations has been developed by the Coal Research Bureau at West Virginia University. Coal-ash slag — the black, glassy residue that comes from the bottom of coal-burning boilers — has

been converted into mineral wool insulation of commercial

quality.

So far the process has only been at an experimental level, but it could have important economic repercussions. It's estimated that by 1980, eight million tons of coal-ash slag will come from pulverized coal-burning power stations in the United States.

A moving experience



Special delivery

The largest shipment ever to leave Canadian General Electric's Peterborough plant took place recently, with Ontario Hydro at the receiving end. It was the 250-ton stator for the first 500-megawatt turbine generator at Lambton generating station, near Sarnia.

A \$225,000 depressed centre railway car was used to carry the stator on its 300-mile journey. Along the way, one elevated curve at London had to be levelled so that the stator, with its high centre of gravity, wouldn't topple. At another point, the rails on a bridge were lowered to get it under the superstructure. The journey was made at a top speed of 10 mph.

A family affair?

The friendly rivalry between the cities of Fort William and Port Arthur will turn into a family affair if the recommendations of a recent provincial government report are adopted.

Proposals for the amalgamation of the two cities along with sections of the adjoining municipalities of Neebing and Shuniah came in the report of the Lakehead Local Government Review, established by the province in 1965.

The name of the new city would be settled by public referendum from choices presented by the Lakehead Planning Board. Close to 100,000 people would live within its borders. There would be a mayor, deputy mayor and a council of 12 aldermen elected every three years.

Along with the city, the report recommended the establishment of a new district municipality covering the present district of Thunder Bay. This level of government would be responsible for health and hospital facilities, welfare, assessment and for carrying out periodic reviews of school division boundaries.

Fort William's city hall would be the headquarters of the new city administration, while the Port Arthur PUC building would house the district government. No action is expected for at least a year, officials say.

Time payments

Almost \$2,000 in nickels, dimes, quarters and pennies was salvaged from the floral clock at the Sir Adam Beck plants at Queenston during Centennial year. The money, thrown by

tourists into the pool surrounding the base of the cloc turned over to the Ontario Hydro Charitable Fund for distri to organizations in the Niagara area.

Lloyd Young, assistant public relations officer, says it first time the amount of money has been announced, "bu say that this is somewhat of a record."

The clock face this year is designed on a teardrop patter the predominant color being red. More than 17,000 inc blooms have gone into its creation.

Ganging up

Rivalry between the natural gas and propane companie be replaced by co-operation to meet the increasing compining the space heating field from electrical utilities. The id discussed at the annual meeting of the Propane Gas Asso in Calgary.

Delegates were told that electrical utilities, particul Ontario and Manitoba, have been making inroads into the field with an effective, integrated approach to sales.

Fast shuffle

Ships that bring coal to Ontario Hydro generating statispending less time in picking up the fuel at Conneaut, Oseason. The Bessemer & Lake Erie Railroad has ins slewing shiploader and two 6,000-ton surge silos at the plooks to a 700 million-ton record in 1968.

The silos, as high as a 10-storey building, pass coal loading system at a rate of 4,000 tons an hour. Then the loader takes over. It slews on a curved rail through an 80 angle to serve as many as 10 hatches without the ship to move.

When the new loader is worked simultaneously with stationary one, a total of 10,000 tons of coal an hour handled.

Technical talk

Copies of the following papers can be obtained from the Relations Division, Ontario Hydro:

Statement to Government Committee on Committee by George Gathercole, Ontario Hydro chairman. At Park, Toronto, June 6.

The Impact of Nuclear Power on System Plant Henri Teekman, Ontario Hydro System Planning. Give Canadian Nuclear Association-American Nuclear Socionference, Toronto, June 10.

Self-damping Conductors for the Control of Via and Galloping of Transmission Lines, by Aubrey Ontario Hydro Research. Given at the summer continuation of Electrical and Electronic Engineers, Chicago, Institute of Electronic Engineers, Chicago, Electronic Engineers, Chicago, Chica

May energy production

Primary energy provided by Ontario Hydro in totalled 4.44 billion kilowatt-hours, an increase of per cent over the same month a year ago. For the 5 months of 1968, the total is 23.65 billion kilow thours, up 8.7 per cent over the same period last of Adjusted for seasonal influences, primary energy mand in May was 4.48 billion kilowatt-hours, .2 cent less than the previous month. The season adjusted total for May represents 53.81 billion kilow thours at annual rates. This is 386.84 per cent of energy demand in 1949.



day is fast approaching when almost everywill have access to a computer, the experts us, and from where we sit the prospect is ty disturbing. We'll be told, in effect, that a puter is now at our disposal and we'll be exted to make the most of it.

aving access is one thing — knowing what do with it is another. Establishing an easy and take with the solid state circuitry set is er said than done. Any of the ice-breakers we come up with are pretty certain to fall flat peners in a pow-wow with a Univac II.

ut it's something which has to be faced and the hope that the new third generation of data tessors recently installed here at Hydro might easier to get to know, we sneaked down to climate-controlled computorium on the end floor. Most of the equipment appeared occupied and was buzzing and clicking y at a great rate. But one unit appeared less swinger and a bit more approachable in its elence.

dling up to the machine, we volunteered a k smile and a friendly pat on the memory R. Rewarded with a faint glow from the ior, we just about blew everything with a corary loss of composure. Confusing the g just for a moment with a used car, we ad a firm kick where its tires would have been reaped some nasty gutteral sounds from the ction of the carbureter. "Sorry about that", hastened to apologize, and on the theory any kind of an introduction was better than by pressed home the advantage.

vell, well, well," we observed astutely, "you be IBM 360 or one of its parts. Are you the hat eats or the end that sheets come out of?" It really surprised at its lack of a sense of or, we became more direct. "Frankly, old we continued, with a quick glance to the that our little tete-a-tete remained unved, "we have a problem. What is the alent of 750,000 kilowatts in horsepower?" s, we thought, was the kind of esoteric ion an engineer was likely to pop at a uter. Stony silence was the only response. repeating the question loud enough to a couple of curious stares from nearby data ssing personnel, we abandoned the audipproach.

fting to the visual, we fished out a card

upon which we'd been resourceful enough to print a rather involved arithmetical teaser having to do with apples and oranges and, wherein, fruit cocktail represented the unknown quantity. Circling casually about the machine, we paused in front of a pair of ruby lights which, although somewhat close-set, were as near as we could come to a visually-sensitive area in terms of human physiognomy.

After a few throat clearings for attention, we whipped out the card and held it up to the rubyred eyes for exactly five seconds (they say precision is half the battle in dealing with computers). Nothing happened. Nor did results improve when we held the card at various angles and distances on the theory that the fool thing might be short-sighted or even cross-eyed.

Playing a final card, in a manner of speaking, we fed our little problem into a slot just below the ruby-red eyes. Action at last. The card disappeared in a fraction of a nanosecond — never to be seen or heard from again.

We fled the scene just as the machine began again to assume the outlines of a used car. But not before one of the ruby-red eyes very distinctly winked off and back on.

Renowned for his eloquence on the public platform, Dr. R. H. Hay, chairman of Kingston PUC, bit off more than he could chew in accepting an invitation to address a local Kiwanis Club luncheon.

He used the occasion to defend the present system of municipal Hydro operation by separate commissions but came a cropper on a sugary gesture extended by five visiting U.S. businessmen. The group came to help Kingston celebrate Good Will Week and had local dentists rubbing their hands in expectation with its gifts of Pennsylvania toffee.

Dr. Hay was introduced by Kiwanian G. R. Davis, general manager of the PUC, who may be getting a bill for some extensive drilling carried out on commission property.

■ A quick review of the labor scene is re-assuring in that the number of people still at work in the province continues to exceed the number on strike by a narrow margin. Highlights across the broader front include the following:

IN WASHINGTON table cloths were ripped off at a textile workers' convention when delegates found they were made in a non-union shop. Rumors to the effect that some of the ladies present were wearing non-union underwear were quickly scotched.

EMPLOYEES of one big Ontario plant staged a mass walkout in protest against management use of a "spying device" to record idle time on the machines. This may be connected with some research being carried out by the Canadian Medical Association which is attempting to define the terms life and death more precisely. Aware that judgments based on visual evidence were often misleading, the company may have called in the medics to study its employees more scientifically.

THE BRAZILIAN civil service has come up with a cost-saving formula well worth observing. Stringent labor laws in that country prohibit firing merely because there is nothing for an employee to do. As a result, the government is

offering half pay to any staff member who promises to quit. It hopes 100,000 persons will take advantage of the offer. The system seems to make sense and should be studied by industry if important savings can be realized simply by hiring too many people.

IRISH LOGIC isn't all reserved for export as a recent solution to a labor problem on the Emerald Isle makes perfectly clear. Fines were imposed on 50 employees of the Irish Electricity Supply Board for participating in a wildcat walkout. They were paid by the Electricity Board as part of the over-all wages and salary agreement.

Classified ads owe much of their fascination to the things they omit — leaving the reader to fill in the details. The following teasers are reprinted from an employee newspaper here in Ontario. Only the phone numbers have been omitted to protect the innocent, but they were the same in each ad.

LOST: In Smith Township, large black dog, white spot on chest, answers to Molson, reward. Call after 6.30.

FOUND: Medium black dog, white spot on chest, Warsaw Rd. Call after 6.30.

Whether or not there is any connection between the dog's name and the appearance of the ad at the start of the beer strike, we leave up to the reader. At the height of the drought, of course, calling this pooch would be tantamount to starting a riot.

As a special reward for readers persistent enough to have followed our meanderings to the bitter end, we have this timely tip for home gardeners and other inveterate pursuers of the weed along walkways, patios and other hard-to-reach places populated by the species chick, stink, skunk, crab and creeping charlie. It's from a Cobourg lady and offers new hope to those disenchanted with commercial herbicides and soil sterilizers as well as the purists who stick to the table knife or long screwdriver.

It's known scientifically as the EK-BLW formula, but don't let that throw you. Any ablebodied gardener who can plug in a reading lamp can master the electric kettle — boiling light water technique which, according to our correspondent, has the following advantages: (1) nothing to measure or mix; (2) no damage to brick or stone; (3) no odor; (4) no danger to pets or plants or birds; (5) very low cost.

We tried it and it works. But do it at night or very early in the morning. After a short session with the kettle on our own premises, an ambulance drove up and two husky gentlemen in white jackets came up to the door.

"Seen anything of a nut on the loose?" they asked discreetly, "somebody saw a guy around here serving tea to the dandelions."



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Follow-lhe-leader? Not on your life. The helmeted crewman is looking down from a Hydro helicopter at a bucket of rock being airlifted into a line construction job. Hydro was the first electrical utility in North America to operate its own helicopter fleet. Its machines fly about 225,000 miles a year patrolling and assisting in the construction of power lines, doing aerial photography, survey work and brush-control spraying. Hydro 'copters save time and money. They're just one of the reasons why Ontario's electrical rates are among the lowest in the world Believe it or not, electricity costs about the same today as it did 10 years ago. You can't beat that for a bargain!



· fairy tale come true where nuclear hopes run high
 era of the tv teacher

ontario hydro news september/1968

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the cover

Two members of the National Ballet of Canada watch as other ballerinas rehearse their roles in "Cinderella" to be shown on CBC television later this year. The company is back in its old stomping ground, the St. Lawrence Hall. But the hall has changed — it's warm, bright, clean and airy through the skilful blending of history and electricity. See page 12 for the story.

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A large freighter glides past the site of the \$218 million Lambton gen station, situated on the St. Clair River south of Sarnia. Lambton wis be producing its first power and the tower is part of a remotely-cor and complex system that will handle prodigious amounts of coal station's steam generators. The main cog in the system is a 525-ton wheel device that will stack the coal and also deliver up to 2,000 thour to the station's bunkers. It will creep along a 28-foot gauge and be operated from Lambton's computer room. For more about this eating monster and the problems associated with its construction, turn to page nine.

by Nalini Goel

As the results from each ward pour in, not-so-seasoned reporters rush them to anchormen to announce them to the audience. Two men on camera spice a poll-by-poll analysis with biographies and profiles of winners and aspirants.

Norman DePoe and Ron Collister on CBC? Templeton and Gould maybe?

Not quite. It's the December, 1966, Ottawa municipal election covered on





closed-circuit TV by Carleton University School of Journalism students.

At York University this fall 1,200 impressionable freshmen will eye a modern morality play, "The Dissenter", again on closed-circuit television, as part of their philosophy course to try and find the distinction between good and evil — the subject in question being the draft dodger.

At the University of Toronto's Scarborough College, the noon-hour news telecast from the student-owned and operated studio has become as popular as "Hockey Night in Canada".

As Marshall McLuhan would say, it's the takeover of the low-pressure, high-participation medium — television. And students are getting its message.

In Ontario, educational television got underway in the mid-1950s. In 1962, a sub-committee of the presidents of provincially-assisted universities dropped a bombshell with a report entitled "Post-Secondary Education in Canada 1962—1970". The report predicted that universities would fail in coping with the shock wave of applications and that extension



Elwy Yost

classes for adults would have to be given with the aid of TV.

As it happened, the shock wave never materialized. But the need for educational TV continued to increase.

Educational broadcasts over regular networks have been around for a while, but they've been hampered by lack of funds and proper timeslots. The Canadian Broadcasting Corporation had its first national school telecast as early as 1954 and since 1960 has aired two national half-hour shows a week. In Toronto, the Metropolitan Educational Television Association (Meta) has valiantly presented community enrichment programs since 1959.

Notable among the pioneers was Hamilton's McMaster University, which in the mid-50s offered a credit course in Russian over CHCH-TV. And Western University ran an economics course over London-based CFPL early in the game.

The Ontario Department of Education set up an ETV branch in 1966 to produce and broadcast programs throughout Ontario schools. To date they have produced 450 programs which have been shown to more

than a million students. Minister of Education William Davis will introduce legislation this fall to establish an Authority for Educational Broadcasting in Ontario.

The ETV branch comprises an assorted crew of 125 — producers, directors, scriptwriters, educators and administrators. Mrs. Rose Wilcox, chief script editor for the branch, says scripts are written by professional writers under the guidance of teachers and each script has to be authorized by an assistant superintendent. High school students may eventually be encouraged to produce their own programs.

In Canada, TV is also the subconscious teacher of hundreds of immigrant children. George Tseng, a top student in the Ontario Grade 13 exams this year, called TV his miracle teacher. The 19-year-old from Formosa didn't speak a word of English when he landed here two years ago. With the help of TV he scored an above-80 average.

Experience with closed-circuit television in the universities has so far shown that students prefer the remote lecture room to huge classes straining to see and hear a "live" professor. "Students like seeing a close-up of the professor," says A. F. Knowles, director of instructional aid resources at York University. At McGill and McMaster, too, the relaxed TV room is the first to fill up.

Scarborough College is the first — and so far only — educational institute in Canada built with educational TV in mind. Designed by futuristic architect John Andrews in 1965, the college makes full use of the electronic medium.

Its production studios can handle several programs at a time covering 50 classrooms. Says Harry Davis, director of Educational Communications and Computer Systems: "The TV presentation makes up one-third of the lecture for first-year students and the rest is backed by tutorials. TV is distributed to every lab and lecture room and our present TV capacity exceeds our enrolment."

At Carleton, TV moved in because the Mathematics Department needed closed-

circuit TV to squeeze in large classe it is being used experimentally by th departments of Sociology and Jourto examine the use of TV as a mediform. Moreover, the Journalism fac is not quite as newspaper-oriented and is providing training more in lin the variety of jobs available in broad says Professor W. Kesterton, who to the subject.

York has produced several TV lectu scientific demonstrations for this fal social science program on the cond that create poverty. Queen's and W. Ontario are the first to delve into a slaw. McMaster boasts a 500-seat a torium with closed-circuit TV. Most universities have ambitious plans u way.

Elwy Yost, executive director of Mabest known from CBC's "Flashback would like every classroom in every to have a TV receiver. Meta was on first groups to produce programs for school viewing. This fall it plans to 90 to 170 original programs written yost calls hybrid teacher-writers.

As interest in ETV escalates, so do the adaches. Like most innovations, brings with it a train of new problet. The provincial and federal government have yet to agree, for example, on definition of ETV. Education is entitle provinces, but the federal autholical control over broadcasting. The tion is: who's the boss when you control the two?

Not that the authorities haven't tried Pierre Juneau, chairman of the Card Radio-Television Commission, has a ETV consists of instructional TV (Market Pierre Juneau, chairman of the Card Radio-Television Commission, has a ETV consists of instructional TV. The Outpublic service or public TV. The Outpublic Service or p



include programs broadcast from s and picked up by schools on all difference of the second of the se



UHF spectrum — has a limited range but may prove a useful alternative to cable TV.

TV recording, or videotape recording, is also a part of ETV. Material being broadcast may be picked up at the studio, recorded on magnetic tape and carefully filed away to be played at a convenient hour.

In July, 1966, Ottawa officials published a White Paper on Broadcasting which said they would consider creating a new federal organization licensed to operate public service broadcasting facilities. At the same time, the Ontario Department of Education applied to the BBG for a channel 19 in the Toronto area.

Nothing has been done so far although a committee of the House of Commons has heard evidence on ETV and the proposed transmission plan.

When a channel is assigned, Ontario plans to make ETV available within 10 years to every home and school by building 28 rebroadcasting stations. An intensive study of the various forms of transmission proved that, at present, broadcasting is the cheapest way of disseminating information provincially.

"We must have access to the air, particularly for adult education," says York University's A. F. Knowles. "In our learning society, the job of adult education cannot be left to institutions. It must be done at home, via TV."

Access could be through a combination of VHF, UHF, Megahertz bands and cable, particularly in Southern Ontario. This means receivers would have to be adapted at a cost of about \$50 and the people most likely to benefit from the ETV channel might decide to do without it. Legislation governing the manufacture of all-channel receivers is a possibility.

Meta, too, is studying transmission alternatives. Mr. Yost predicts that cable hookups between schools will probably be the answer for Metropolitan Toronto. (Cable TV services costing \$5 a month are already being used by many Canadians for better color reception and more channels.)

Educators also have to decide how they will co-ordinate programs on the new channel. Douglas Todgham, executive assistant to the director of the Department of Education's ETV branch, says it will operate through five regional stations — Toronto, Southwestern Ontario, Ottawa, Sudbury and the Lakehead. Branch director Ran Ide says that Meta could form the

core of the Toronto region. The Otta School Board would probably parti in that region.

"The imaginative Hall-Dennis Reporthe Aims and Objectives of Educati Schools in Ontario agreed that ETV not attempt to serve the whole proving with identical programs, but should encourage the principle of local parpation," he adds.

Universities have made a start by se an Ontario Universities TV Council job is to provide information on late developments. W. J. McCallion, ch of the council and director of Educ Services at McMaster, says that althuniversities are prepared to presentime adult education credit courses ETV channel, it is difficult to make duntil federal intentions are clear.

The TV council will also discuss povideotape exchanges. Professors are already meeting to develop prograr representatives from six universities now preparing a first-year biology. Next might be a common program computer technology.

Ronald G. Atkey, assistant law pro-Western, says his faculty would like with the other five Ontario law schools to perhaps all Canadian law schools to a bank of videotapes showing couprocedure.

"We also hope to sell this idea to the Society of Upper Canada and work VTRs to be used for continuous presional education through an ETV or cable," he said.

What is now needed is a super VTI to storing and cataloguing all film at tapes. The ETV branch, for example to use a program eight to 10 times a dating it every year.

Unabashed courtship between brocasters and educators is essential of services of ETV. Producers are black stressing human interest before comparing the CBC's policy is to get approveducators before any national sch

ETV guides, left, which preview program contents, enable the teacher to stand back and watch the learning process in action.



sput on the air, although no approval jired by law. The ETV branch's promust, of course, be approved.

Igh Canada is making progress, by no means ahead. Japan created channel in 1958 and now has more 00 stations. The U.S. boasts 140 nannels along with more than 1,000 -circuit TV installations serving tions and industry. Britain concluded go that the TV teacher is highly ve for adult education provided that ture is reinforced by supplementary al.

g into the future, MIT professor Hill has predicted that within five etworking of ETV stations could be y satellite for half the price. An ETV experiment underway in Chicago enables kids watching a program to phone for more information, which is immediately provided by a computer linked to the telephone.

Scientists see each ETV program divided into sub-programs tailored for different groups (somewhat like regional editions of magazines). It's called made-to-measure TV!

Children now in kindergarten will likely own homes connected by a network of cables that will give them personalized TV and educational services. Satellites will bring them programs from across the world. But that's tomorrow. Today's task is to get ETV on the rails.

tempo ups the pace of electrical living

by Gordon Murphy



Fastest inter-city train on the continent, the CNR's Turbo will do the Toronto to Montreal run in a minute under four hours.

Considering what Canadian railways are doing to meet the demands of modern inter-city travel — notably the CNR with its Tempo Service and Turbo trains — it's easy to imagine Thomas A. Edison nodding benign approval from whatever Valhalla he shares with other departed electrical giants.

The inventor began his working life hawking sandwiches and other wares on passenger trains in the quavering light of

oil lamps. Electricity, with which Edison had more than a passing acquaintance, has been a major factor in changing all that. (On the Tempo, uncertain sandwiches have been replaced by microwave-prepared meals served in a setting featuring soft fluorescent lighting.)

The CNR says its Tempo service, now operating five trains in Southwestern

Ontario, is electrical living on the It's certainly all of that.

Tempo trains are the first in Cana specifically for inter-urban community to 1,800 horsepower locomotive pull them are equipped with 350-low diesel generators to supply 600-v power, which operates all services Locomotives are also equipped w controls, enabling engineers to o



direction without the conventional around on the Tempo's Toronto-30r and Toronto-Sarnia runs.

notive buffs who still lament the 1g of the ponderous smoke-spewing lorse may wipe a nostalgic cinder he eye at the approach of the Tempo, is streamlined orange and white But passengers are obviously

prepared to sacrifice romance for the reality of getting to their destination in minimum time and maximum comfort.

Where conventional trains rely on steam heat, the Tempo uses electricity for heating, air conditioning and supplying hot water. A transformer in each car reduces the 600-volt supply for lighting, razor outlets and other accessories; automatic heating elements protect the water system from freezing in winter.

For heating and cooling, an injection system under each car blows air through wall ducts extending the length of the car. Heating elements in the system maintain an even temperature in cool weather and a refrigerator unit enables passengers to keep cool in summer.

Elimination by electricity of such trials as struggling with uncooperative doors





between swaying cars help passengers keep their inner cool. Doors are of the sliding variety and are operated by 32-volt motors actuated by finger pressure.

As for dining cars, they've been eliminated by pre-cooking of food and final preparation on board in speedy 120-volt microwave ovens. With fold-down trays at the seats, the Tempo system saves car space and makes for faster service.

With new on-board Tempo equipment signalling all but the last gasp of the steam age, other equipment was designed to keep electrical services operating at terminals.

This consists of 500-kilowatt transformers on the platforms into which detached cars are plugged. The sub-stations use power from the local Hydro system and step down the voltage to the 600-volt AC required on the trains.

Each transformer can service two fivecar Tempos at the same time. They are tamperproof and designed for year-round outdoor use. The unit in CN's Spadina Coach Yard in Toronto also services the Turbo trains.

The Turbo is another chapter in the story in which the railway is gearing for the future. Described by CN officials as the most significant passenger service innovation in the last century, the Turbos are designed along aerodynamic lines with a potential top speed of 120 miles an hour. Initially, they will operate about 100 miles an hour on the run between Toronto and Montreal.

Even at this "reduced" speed, they complete the 335-mile non-stop trip in 3 hours 59 minutes. That's an average of 84 miles an hour, making the Turbo the fastest intercity passenger train in North America.

The Turbos have aluminum skins stretched over aircraft-type frames. There are no vestibules between cars — doors are in the centre of each car — and the trains

are pressurized to keep out dirt, dust and noise.

Motive power is provided by a modified version of the turbine aircraft engine. The turbines, which burn conventional diesel fuel, are housed in dome club cars. Five turbines are involved: four to drive the train and one to supply power for the all-electric service.

While the Turbo was designed to run on the existing railroad, changes were necessary in both track and signal systems to accommodate the fast-moving newcomer. Sections of rail have been welded in maximum acceptable lengths. Electronic devices activated by approaching trains to lower crossing barriers have been moved back to allow for the Turbo's higher speed.

Turbo trains will at all times be under the all-seeing eye of CN's Centralized Traffic Control (CTC) as they speed across the Ontario-Quebec countryside.

CTC, a highly sophisticated electronic system best exemplified by its Toronto-based operation, has been extended along the entire Toronto-Montreal line to welcome the Turbo. Newly installed equipment makes it possible to hand over control from area to area as the train races to its destination. And the system is fail-safe in that it cannot signal two trains into conflicting routes.

Typical of CTC centres is the one in Toronto where a despatcher sits at a control console before a 36-foot-long lighted board which schematically reproduces all lines and train movements within the area. The console can receive up to 900 movement indications every five seconds. The despatcher routes trains electronically by the push of a button. Two-way radio communication between despatcher and train is built into the system and a complete record of train movements automatically kept.

Lights will soon be flashing on the Toronto board to record the passage of the Turbo. The train's sophisticated electrical and electronic systems will allow its passengers to travel in comfort and safety.

Aboard Tempo, southwestern Ontario travellers eat meals at their seats. A microwave oven powered by electricity assures they're piping hot.

re's a fossil-gobbling monster perched the bank of the St. Clair River south Sarnia — but no one is particularly id of it. In fact, most observers are ynright fascinated by the 525-ton emoth.

re properly called a stacker-reclaimer, mechanical monster will be the main in the coal-handling system of ario Hydro's Lambton generating ion, which is scheduled to produce first ray four months from now. The machine be able to receive coal from ships at a of 3,000 tons an hour and deliver it to powerhouse bunkers at either 1,000,000 tons an hour.

rain-child of the massive Krupp works Vest Germany, the stacker-reclaimer a decidedly Canadian accent. Cana-I General Electric supplied the control system and some 20 electric motors and thrusting devices that give the giant its muscle, while Star Steel of Milton fabricated the framework and Leckie Brothers of Kitchener put the components together. And just to keep it on the right track, another Canadian firm — the L. B. Foster Company — built 800 feet of 28-foot gauge rail. The behemoth will creep along the track at a maximum rate of 60 feet a minute when it's creating or demolishing the adjacent coal piles.

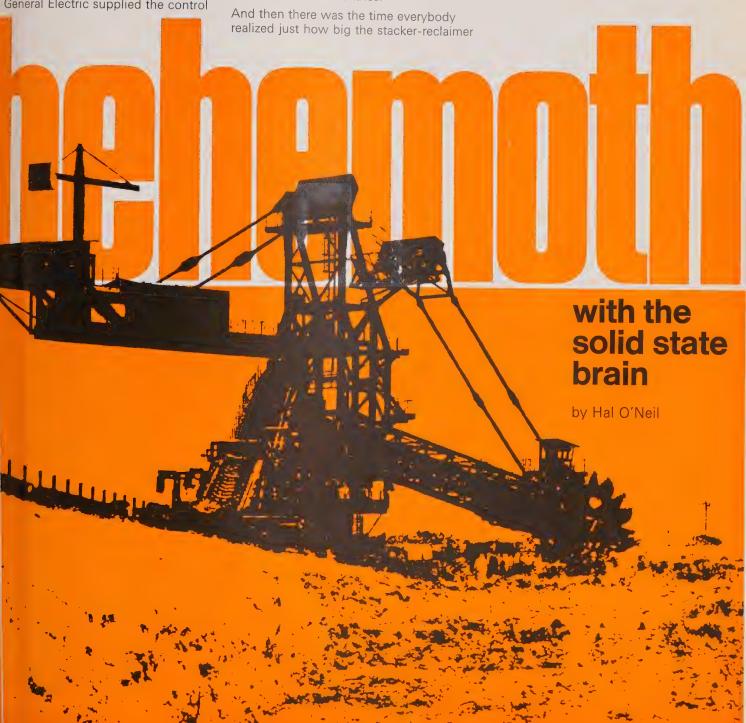
Assembling the coal-gobbler presented some interesting problems.

"Welding, for instance," says Arvo Niitenberg, project engineer. "It wasn't easy to join the parts from Krupp to those made here. Welding standards and designs differ in the two countries."

was. The base didn't quite make it through the project's main gate, ripping a post out and taking it along.

Although there was a Krupp man on the site during assembly and periodic visits from one of the company engineers from Chicago, the machine didn't get final approval until last month. That's when the electrical work was completed and two technicians from West Germany arrived to put it through its "commissioning".

The most prominent feature of the stacker-reclaimer is the bucket wheel. About as high as a two-storey building (the whole machine is five storeys high) each of its nine buckets gouges out a 1.1 cubic yard bite with each turn. The boom on which the wheel is mounted can slew



from side to side as well as up and down to cut into the 40-foot coal piles at the correct level and position.

All its movements and those of the associated conveyors, crushers and gates will be controlled by an electronic program played out on a symphonic ensemble of transistors, diodes, resistors and capacitors. Orchestrated by men in Lambton's computer room, these instruments of solid state wizardry will control the massive handling equipment to receive coal from ships, stack it in selected areas, reclaim it from the stack and transport it into the powerhouse bunkers. A closed-circuit television system will permit the operators to survey the scene.

Unlike conventional coal-burning steam generators, which have bunkers large enough to hold overnight fuel needs, the Lambton silos will contain only enough coal for six hours' operation at full load. The smaller bunkers are made possible through an automatic fuel-handling system, which will see them refilled almost hourly.

Although the automatic system is expensive, economies are realized in the smaller bunkers and also the smaller building to house them. And the problem of the coal packing too tightly, as it occasionally does during the filling of big bunkers, is eliminated.

The control equipment employs switches and status lamps to permit manual operation on a stand-by basis. Two men will run the system with all the safety checks and

logical decisions made by the electronic equipment. The system will be triggered into action when the coal in the bunkers is weighed and found below a pre-set level. Just enough coal will be fed from storage to replenish them, and this will result in the 3½ miles of conveyor belting being devoid of coal at the end of the run. Such a situation reduces the strain or load when the system is restarted.

The first shipload of coal will arrive this month, but only 500,000 tons will be delivered before navigation ends in December. The site will be capable of storing about three million tons. Only self-unloading ships will deliver coal, which can be fed either directly to the powerhouse bunkers or stocked out for later reclaiming.

Mr. Niitenberg terms the month of September a milestone for the \$218,000,000 generating station, seeing the completion of several important stages.

The second of the two 550-foot chimneys, which will serve units three and four, will reach its full height. However, a steel liner and insulation still have to be installed. As the highest stacks in the Hydro system, they will give a wide dispersion of flue gases.

Unit two, the first of the four 500,000-kilowatt generators that will go into service, is also nearly completed. Tests of the boiler have been conducted to determine whether there are any leaks in the system.

Close to the end of the month, the boid be fired for the first time. These unit coming on line between January, 19 and the fall of 1970, will be the large Canada. When all four are in operation they will provide enough power for present electrical needs of Metro To and Kitchener.

A water treatment plant is now in full operation, ready to supply purified for water and cooling water to the units intake channel was flooded in midand other work there was continued through the summer. In full operation station will run 36 million gallons of an hour through the systems. Coolin will be drawn from the river and return slightly warmer, but clean.

Much of the operation of the plant be monitored by computer. It will p instant information for the operators will prove particularly valuable durin start-up of a unit when stress on connents is critical. The first phase of the installation — that of temperature so ning — has been completed. This p avoids overheating by telling operatemperature in various sections of the generator and boiler.

The work force on the site has grove 1,750 and the hiring of operating period is underway. Office and maintenance will be hired in the new year.

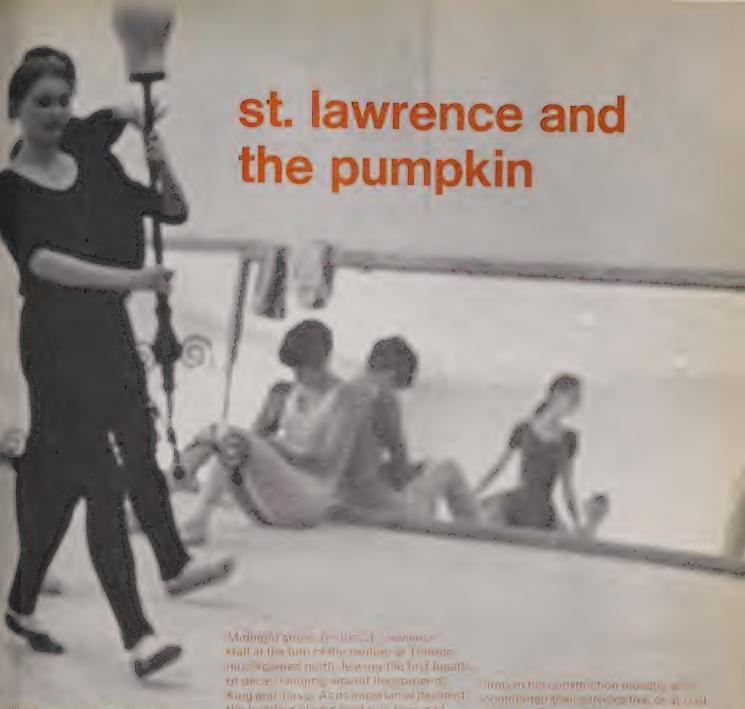
In keeping with the monster label the been hung on the stacker-reclaimer, been painted two shades of green. It's really all in the interests of supplemore kilowatts to a power-hungry province.

photos by Gary Smith



bucket-wheel, business end ambton's stacker-reclaimer, of a worker. In normal ation, the control cab will be ty, with a computer guiding machine and the miles of ciated conveyor belts.





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I BE EMPORED E CONSESSION TO DES LIVERTIEN -multi-fillough - as the extensive are of electic power shourt from the gas in shandelear and the gas street lamm outa 50, the building a alli aleatro. Everne will are poncerled in the collings and (ventures on page 20)).

end of the yellowcake line

it's "all change" at Port Hope as this sleepy town cashes in on the atom

They floated logs by the thousand down the winding Ganaraska River. Tall masts bristled across Port Hope's jammed harbor as schooners and steamers rode at anchor. Busy streets murmured with the sounds of a population 10,000 strong.

That was 100 years ago. Then it was lumber. Today's commodity comes in black steel drums — a yellow powder that starts its journey by plane, barge or train from points as remote as Beaverlodge Lake, in northern Saskatchewan.

The forests have disappeared; Port Hope is betting its future on the nuclear age.

Crown-owned Eldorado Nuclear Limited processes all the yellowcake — that basic product of uranium ore — in Canada. The company sits smack at the end of that once bustling harbor where cocked hats have surrendered to white coats and radiation detection badges.

Barely a mile to the east is the atomic fuel department of Canadian Westinghouse. which uses basic uranium products from Eldorado and is stepping up its testing and fabrication of a wide range of nuclear fuels. In nearby Peterborough, Canadian General Electric will also fabricate Eldorado's nuclear materials into fuel bundles.

Eldorado, one of the town's largest employers, has started an \$8 million project for the production of zirconium metal, a heat and corrosion-resistant material used to encase nuclear fuel. Work has also begun on a \$10.4 million plant for the production of uranium hexafluoride,

a gaseous substance from which enriched uranium is obtained. By 1970 Eldorado will have more than doubled its payroll. Canadian Westinghouse makes the fuel bundles that energize the Douglas Point power station and is manufacturing zirconium tubing for Hydro's \$528 million Pickering station fast rising east of Toronto.

Now Ontario Hydro has acquired 700 acres near Wesleyville, five miles west of the town, for a major thermal-electric installation. No decision has been taken yet as to whether it will be atom-powered or coal-fired.

Yet the nuclear age has yet to make its full impact on a community that has remained relatively stable since its importance as a port declined.

True, there's evidence of increasing urbanization. The mansions overlooking Lake Ontario on Dorset West — once the summer havens of wealthy Americans — have been converted, for the most part, into apartments. There's a trickle of commuter traffic making the 130-mile round trip into Toronto each day. The population has increased but slowly to stand at a current 8,800. Undoubtedly, it's the next decade toward which Port Hope is optimistically looking.

Mayor Michael Wladyka talks about it incessantly. You have to listen to him on the run, though, as he caters to the public from his Queen's Hotel on Walton Street; between innumerable meetings at the town hall; while he speaks at civic gatherings and service club meetings in neighboring communities on his one-track subject: "Port Hope, the open end of Lake Ontario's golden horseshoe."

Not even a recent \$750,000 industrial fire could dampen Mayor Wladyka's (pronounced Ia-DEE-ka) enthusiasm for long. Three small plants were destroyed and 60 people were thrown out of work. But a dozen or so other industries continue to produce a steady flow of goods for Canadian and export markets. Included are leathers, fertilizers, lacquers, lumbering equipment, sheet metal. furniture, conveyors, files, auto parts and stampings. And, of course, there are the multi-hued metals and minerals of the nuclear era.

Eldorado's marketing manager, Douglas H. Bullock, has a dramatic way of describing the uranium hoard stored in two large government-owned warehouses at Port Hope.

"If the 5,000 tons of uranium now in storage were translated into its energy





An Eldorado worker moves yellow-cake from filter to tray on its way to becoming uranium oxide.
Westinghouse employee is shown checking a zircaloy tube for the calandria at Pickering nuclear station. Port Hope of an earlier era makes a contrast.



equivalent in coal," he says," the Ganaraska River valley would be filled to the brim, and then some, with 1,000 million tons of coal."

The hoard represents uranium stockpiled by the Canadian government to allow some mines to continue producing when the United States decided to forgo options to buy uranium in the early sixties. It would also keep a power station the size of Douglas Point, on the eastern shore of Lake Huron, going for more than 200 years.

Canada's known uranium reserves are among the world's largest. Beaverlodge alone mined nearly six million tons of ore from 1955 to 1965. And to date, the Port Hope plant has refined the above tonnage to 12,000 tons of uranium oxide.

The refinery has been in continuous production since 1933. During its first decade, the main product was radium extracted from ores mined at Great Bear Lake in the Northwest Territories and in the Congo. From the by-product, uranium, came small quantities of uranium salts for ceramic coloring.

Between 1943 and 1953, radium and uranium were of equal importance. Since 1953 only nuclear grade uranium has been produced, the plant having been converted to a solvent extraction operation. Approximately 45,000 tons of nuclear grade uranium have been produced to date.

Eldorado has also added a number of facilities over the past six years to meet the demand for uranium in suitable forms for use as reactor fuels. Its next product will be zirconium metal.

The Eldorado refinery processes three classes of nuclear products:

• Natural uranium from yellowcake to refined ceramic grade dioxide powders, metals and alloys.

- Enriched uranium of various grades for fuel. Canada does not manufacture enriched uranium, but imports it from the United States in gaseous or metallic form for processing into fuel for subsequent domestic use or for export.
- Depleted uranium from which are made ceramic grade dioxides, carbides, special alloys and metallic castings for shielding and other high density applications.

Canadian Westinghouse tests, manufactures and sells a wide variety of fuels for reactors in Canada, the United States, Great Britain, France, Japan, Switzerland and India. It, too, is rapidly expanding its markets.

Eldorado began up-dating its operation in 1953 and the rest of Port Hope followed. A cold hard appraisal showed the town fathers there had been little growth in their self-styled "prettiest town in Canada" since the turn of the century, and certainly no progress to speak of.

The community, they found, was divided into two civic and social solitudes by the rambunctious Ganaraska that habitually flash-flooded through the centre of the town. Townsmen on the east side of it, Protestant Hill, fought the westside folk in English Town. The river was also a communal drainage ditch.

Although the town feuded internally, it ganged up in common jealousy against neighboring Cobourg and earned for itself the label "Port Misery".

To start curing its civic sickness, Port Hopers swallowed internal and external rivalries. They built a sewage disposal plant in 1959. They expanded town boundaries another 1,000 acres in three land annexations that provided residential and industrial areas, and extended services to them. Out of a voluntary payroll deduction scheme, citizens financed a new 70-bed hospital without the aid of town taxation. An official town plan has been approved by Queen's Park.

Most heartening, after putting its house in order, Port Hope extended the hand of friendship to Cobourg and was warmly welcomed. Now both communities agree in principle that within the near future they must adopt some form of regional government. They see it as a plan that will allow the joint control and development of all land between the towns from Highway 401 to the lakeshore. The land would be serviced for housing, business, industry and recreation while allowing each town to retain its identity.

These are the plans. And in this nuclear age Port Hope is beginning to live up to its name. \Box





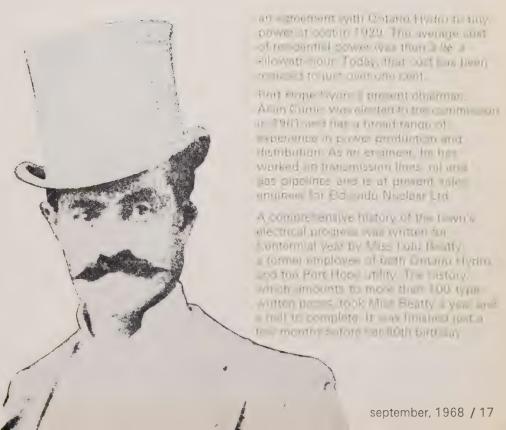
Canadian Westinghouse ships reactor fuels from Port Hope right around the world. This plastic container shipment is destined for India, but Great Britain, France, Japan, Switzerland and the United States are also customers.

ticity came to Port Hope in 1886
Thismith James Wester O unland
took a bold step into the power push-Within a few months his are larges.
Ged in several stores and hote's and
persuaded the town to let him install
reet lights. These burned from dusk
dnight at a rest of 30c per nimp
hight.

an initial experiment with steady builden set and a nyord-effection after at the site of a former flour mills nented the Port Hope Times: "The IC light station at Beam show Mills of the most interesting places in and a visit during the evening will anyone"

ing after, another the most summer is name of Dr. Robert Contest formula to be used to be summer to be used to be summer. If the sum of the product of the toward to be sum of the product of the toward to be sum of the product of the toward to be sum of the product of the toward to be sum of the product of the toward to be sum of the product of the toward to be summer.

that day. Port Proportional has material the stability and of the community. I have a winner of





loor street goes underground

underground movement without political overtones has ched major proportions along Toronto's Bloor Street. First, vas the subway, a system of tunnels and open cuts that inted cumbersome streetcars from the busy thoroughfare. w overhead wiring is taking the plunge.

changeover promises to be worth all of the \$6 million it eventually cost to construct a 10-mile underground system viring that will extend across the city from Luttrell Avenue he east to the Humber River in the west. Going or gone are intless wooden poles and a maze of lines. Moving in are 40t standards of extruded aluminum mounted by luminaires ng 66 to 100 per cent more illumination than the lights / replace.

looked for the newest and most efficient lighting source sible," says Bob Hicks, manager of Toronto Hydro's distribu-, planning and design department. "We settled on a 1-pressure sodium vapor variety."

p samples were submitted by the three largest manufacturers lorth America and were installed at various locations along or Street to test public reaction. The final choice was made the basis of overall economics, including lamp replacement power costs.

at is still the big factor in going underground, particularly when mes to converting overhead lines, as in the Toronto project.

le the cost of installing underground distribution systems pw residential areas has decreased sharply in the past few years — in some cases from a ratio of nearly 10 to 1 down to about 2 to 1 compared with overhead construction — costs for conversion from overhead to underground distribution in urban commercial areas have continued to increase.

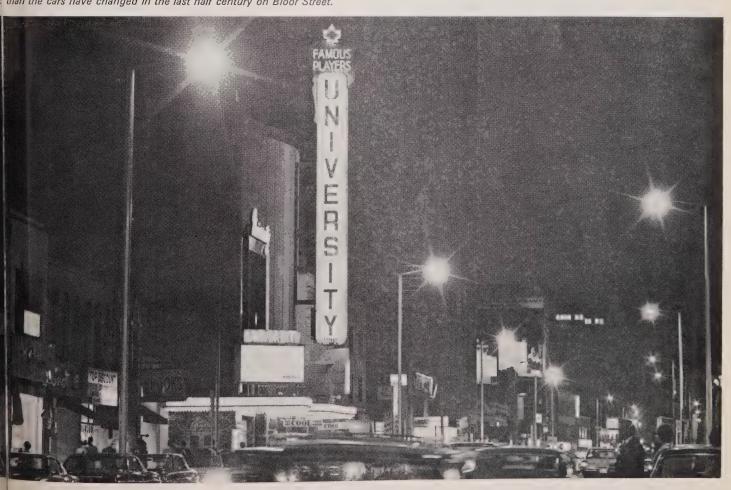
There is a relatively modest sharing of costs in Toronto's Bloor Street project. Traffic lights are paid for by Metro Toronto and the utility is reimbursed for conduit work related to the signal system. The municipality pays the utility a nominal sum for removing wooden poles and also pays 50 per cent of the repaving costs. Toronto Hydro foots the remainder for the system and bills the city annually for street lighting costs.

The new lights measure up to recent recommendations by the Canadian Standards Association. "We get 100 lumens per watt," says Bob Hicks, "compared to only 50 lumens from the conventional mercury vapor type.'

Consisting of Danforth Avenue in the eastern part of the city and Bloor Street in the west, this is one of the busiest traffic arteries in Canada. It will soon be safer for both pedestrians and motorists. And the new lighting system is more economical. With the combination of higher poles and improved luminaires, the street will be better lighted by less than half the number of units required under the old system. Photo electric cells on each pole will control the lights individually under a system designed by Toronto Hydro engineers.

Access to power cables is provided by manholes located every 150 feet or so along both sides of the street. Service conduits

than the cars have changed in the last half century on Bloor Street.



from these manholes will enable customers to receive power from the underground lines. Sections of cable passing through the manholes are not encased, making it possible to replace defective lines simply by cutting them in adjacent manholes, pulling them through and replacing them.

The job has not been without unexpected turns, a few serious, some less so. For instance, there's the case of the tanker-truck loaded with fuel oil that rolled up to an address where a service conduit had recently been installed. This particular conduit had been bent upward and left capped at the side of the building. The driver descended from his truck and clamped the heavy oil discharge hose on the unoffending pipe.

Some thousand gallons later, with conduits flooded and a couple of manholes awash, the mistake became evident. The oil company recovered its property by means of a pumping operation, but the odor lingers on. "It was," said a Hydro man, harking back to his cricketing days, "a very sticky wicket." In postscript, it might be said that all service conduits are now suitably identified.

Work is proceeding without interruption to traffic along the busy artery, with Hydro crews adhering to a rigid pre-arranged schedule which permits operations at certain times in certain places. Thanks to the drawing up and exchange of construction programs by other utilities and the city, Toronto Hydro has been able to co-ordinate its work with other jobs involving digging and repaying.

The last of the streetcars disappeared from the Bloor-Danforth route last May with the opening of the east and west extensions to the original subway. And with the paving over of the remaining streetcar tracks, tram travel along the route will be but a memory.

On completion of the Bloor-Danforth project by the end of 1969, the City of Toronto will have more than 50 miles of road without unsightly overhead wires, 14 miles of it expressway. Most of the downtown network is already underground, despite what might appear to be evidence to the contrary — overhead lines needed to serve streetcars and trolley buses of the Toronto Transit Commission. Toronto Hydro supplies alternating power in bulk to the Transit Commission, which converts it to 600-volt direct current for its surface and subway operations.

More than half of Toronto Hydro's load is now supplied underground and more than two-thirds of the utility's investment in distribution plant is in underground installations.

According to Toronto Hydro General Manager Harry Hyde, pressure is growing for underground installations. As he sees it, the changeover will be gradual with priority being given to redevelopment areas where load conditions, such as the needs of large apartment blocks, make underground systems economically feasible. Serious consideration is also being given to further conversion projects on important thoroughfares.

"While aesthetics are a consideration in going underground," says Mr. Hyde, "there are conditions where load requirements demand a different approach and underground systems are almost a necessity."

Already the street lighting system, which will be the showpiece of the Bloor-Danforth project, is having its repercussions. Merchants along the route, many of them in consultation with Toronto Hydro, are brightening up. They're flooding their premises with light and color to match the new look.

Elimination of overhead wires is strongly endorsed. As one long-time observer of the Bloor Street scene puts it: "The only ones who'll miss them are the birds. They were for the birds, anyway."

st. lawrence hall

(continued from page 13)



Dancers go through about one pair of shoe every two weeks, so a special shoe room hobeen set up at St. Lawrence Hall.

an elevator takes visitors to the Grea Hall on the third floor or dancers to the rehearsal room on the second.

A forced-air electric heating and air-conditioning system replaces five se oil furnaces. The internal climate is all tomatically balanced so that excess generated by an audience or guests the Great Hall is diverted to other particles of the building. Similarly, on a sunny winter's day, the southern exposure have heat to spare for the northern.

Air-conditioning is a boon to the da "I've seen them come into rehearsals and after five minutes the perspiration literally streaming down their faces," National Ballet spokesman. "The da hardly recognize the place now. The can't believe their luck."

While the Fairy Godmother was bus waving her wand, the ballet was scall throughout rented quarters in several parts of the city. Now the rehearsal reshowers, offices, wardrobe and scer shop are all under the one roof — luindeed for an organization that has plagued by financial difficulties since inception. Even today, drawing supperments, Metropolitan Toronto and pridonations, the ballet cannot operate effectively unless it has broad public backing.

Fittingly enough, "Cinderella" was t first ballet to be rehearsed in the ren building for a CBC television product later this year. The pumpkin is once again a carriage and there seems ev prospect that the company of what been hailed the finest ballet in Nort America will live there happily ever



s. Eloie Strike

Strike, the wife of former Ontario Hydro Chairman W. Ross e, died on July 17 in Memorial Hospital, Bowmanville. News er death came after the last issue of Ontario Hydro News went less.

rs. Strike was well known and admired throughout the fince. She attended numerous OMEA and Ontario Hydro trions with her husband, who first became involved with to in 1932 when he was elected to Bowmanville PUC. He chairman of Ontario Hydro from 1961 to 1966. Mrs. Strike, former Eloie Graham Casselman and a graduate dietician, ther husband in Morrisburg.

neral services, attended by present Hydro Chairman George ercole, other Ontario Hydro officials and friends from the ucipal utilities, were held from Trinity United Church in manyille.

w faces

appointments in the Consumer Service section of Ontario have been made in recent months. E. Grant Bainbridge sloved to the position of consumer service and sales engineer (ortral Region and Charles H. Lusk has taken over as municipal nee engineer in head office.

We Bainbridge obtained his engineer's degree from the Universylf Toronto in 1940 shortly before he joined Hydro as a neglineer at Kingston. After military service he moved into a possumer service branch, holding various positions both at a office and in the regions. In 1959, he was made municipal



Gr t Bainbridge



Charles H. Lusk

service engineer, a position he held until his present appointment. Mr. Bainbridge spent two years in Ghana with the Volta River Authority initiating a power costing and rate system.

Mr. Lusk joined the commission in 1947 after war service and graduation from the University of Toronto as an electrical engineer. The following year he moved to Belleville as consumer service supervisor of the former East Central Region. In 1960, he was transferred to Central Region as consumer service superintendent and last year moved to head office as municipal service superintendent.

Facing the public

Although the old girl may be in her 90th year, the CNE provided plenty of opportunity for two members of the Hydro family to show off. Working side by side in the Better Living Centre, Toronto Hydro and Ontario Hydro presented revamped shows from last year's Centennial efforts.

At the Ontario Hydro display the theme was one of do-it-your-self. Visitors were able to pedal a generator to turn on a row of lights, switch on a tape recorder or activate a closed circuit TV set for a picture of themselves. In other sections, a person could compete with a hand water pump against an electric model, and manipulate remote arms used to handle radioactive materials.



All eyes were on the chicks.



Toronto Hydro's production out-swung last year's effort with a seven-a-day showing of mod models extolling the virtues of fashion and the utility. Weaving the girls and slides together along with an original song, the sit-down show lasted 40 minutes. The central theme was a comparison between Los Angeles and Toronto, the continent's fastest growing cities. The audience was shown how the local utility was growing along with the city and all the services offered by it.

John Lowry, Toronto Hydro director of consumer service, explained: "We were concerned with presenting an improved image to the public and aimed the show at the young, unmarried

set." He went on to say that the utility regards these "swingles" as the market of the future.

In a theatre at the centre of the Ontario Hydro display, a three-part screen was used to tell the story of the commission's wide-spread resources. While the film showed scenes of far north developments, the slides would cover such items as log booms and northern fishing.

Visitors were also able to examine delayed sound recordings, chickens hatching in an electric incubator, the lighted model of the Pickering nuclear power station and a map of the provincial power grid. Ontario's award-winning film, A Place to Stand, was shown in another section.

Bills got through

A deluge of delayed mail flooded municipal utilities in the wake of the three-week postal strike, which they weathered with a variety of stop-gap measures.

In Metro Toronto, utilities worked out a co-operative system so customers could pay bills at the nearest utility office. Some utilities used students and part-time help to deliver bills. In Port Arthur, office girls whose workload had been reduced by the strike served efficiently as volunteer messengers. Some utilities, which usually deliver bills by hand, were unaffected by the stoppage.

Ontario Hydro held back 40,000 to 60,000 bills a week for rural customers. The late payment penalty was dropped on delayed bills.

Strike effects linger on

Effects of last year's construction strike are still being felt at Lambton generating station site, near Sarnia.

Recently, Hydro approved an additional expenditure of \$68,465 for boilers and auxiliary equipment that had previously cost \$40,308,656. Some of the extra expense was incurred by Combustion Engineering — Superheater Limited for demurrage charges on railway cars which sat at the Lambton site and could not be unloaded during the strike. The sum also includes charges for the double handling and storage of further equipment at the Sherbrooke, Que., plant of Combustion Engineering.

Everybody's business

When the boss takes an interest, you can bet it's important. So when 17 employees of Kingston PUC completed an eight-week first-aid course, they were happy to receive congratulations from PUC Chairman Dr. R. H. Hay. Using Sylvia Hickey — the only woman on the course — as the patient, David Buchanan shows Dr. Hay, a physicist, one of the pressure points to stop bleeding.



X marks the spot.

Leaders confer



They head our two largest public utilities.

Next-door neighbors should get together every once in a So on that theory, senior management of Hydro Queb Ontario Hydro held a combined meeting in Toronto recen

Before the meeting started, Chairman George Gatheron Hydro Quebec President Jean-Claude Lessard had a pichat. Discussions centered on the inter-relationship nation's two largest public utilities. They exchange poseveral points along the Ontario-Quebec border and are most the inter-provincial and state grid system.

municipal briefs

Electrical utility commissioners in Kent County plunged into public relations recently with a meeting at Tilbury. by Tilbury Mayor Joseph Young, who heads the Di OMEA public relations committee, the meeting also in discussions on the role of the commission under regional ment. The possibility of establishing a county-wide centre for small electrical appliances was also discussed. Ralph Bishop has been appointed Toronto Hydro's dire management services. Mr. Bishop joined the system in 19 graduating from the University of Toronto in electrical ering. He was formerly manager of the service maintenance ment and supervisor of personnel, garage, stores and pure A Toronto newspaper covered a blow-by-blow account Bishop's actions during last January's ice storm. It ran to a whole page

Windsor Utilities Commission is greeting the public with face. Work has continued through the summer on the reoistion of the main floor of the commission's Ouellette building at a cost of \$11,000. The appliance sales dep has moved to a window area for maximum public exportant make room, the cashiers were moved to the building's no So that all customer business can be conducted on the method the customer service department moved down from the Rounding out the reorganization is the establishment of training program in customer relations.

A veteran of electrical utility service in the Metro Toror 83-year-old Alfred H. R. Thomas, died recently. Mr. Thor sa member of the former New Toronto commission for 4 Nepean Hydro is furthering public relations with a column local weekly newspaper under the byline of Chairma Cross.

Parks and recreation services may soon come under the Petrolia PUC. The local council has asked the commi study a possible takeover.

Archibald E. MacIntyre, 71, a member of Stratford Pl

to 1959, died recently. He was an electrician with the CNR tratford until he retired in 1956. He also served as an OMEA stor for 11 years.

wel PUC is moving into a new home. Construction of a 50-foot administration building next to the Main Street ping station has been completed in just under two months, of the one-storey structure: \$30,000.

as a personal "tell the people" duty for Port Elgin Hydro ager George Hammond when he spoke to the local Rotary Mr. Hammond, who has been manager since 1957, told group how the Hydro family functions in Ontario and just a customer's dollar is spent.

prmation Please" could have been the title of a June connect at Kingston for utility commissioners. It drew representation five neighboring municipalities with discussions on the rical development of Hydro in Ontario, the legal obligation and limitations of the commission, finance and operations policy.

w uniform rate schedule comes into effect October 1 for omers served by the former electrical utilities of North Bay, Ferris and Widdifield. The three became one on January 1, existing rates were continued until the new schedule was ed out. North Bay Hydro Chairman Wes Cooke says estisshow the new rates for each class of customer will reduce all revenue from the 130-square-mile city by 3.1 per cent. Suburban rate will drop slightly while former city customers's will rise.

ardine PUC has a new superintendent in the person of ey Watson, who moved over from Orangeville PUC. Mr. on worked for Ontario Hydro in the Wingham area before ting the municipal utility field. The commissioners have mended their secretary, Winona Nelson, who did much of work of superintendent before the appointment.

lecade of generation

s A. Fitzpatrick, chairman of the Power Authority of the of New York, and D. P. Cliff, first vice-chairman of Ontario o, proudly stand astride the international St. Lawrence power project.

been a decade since Dr. Otto Holden and J. Burch McMorchief engineers of the two utilities, pushed a button that do tons of earth and rock in the air to send water cascading do the twin generating stations — the Robert H. Saunderstwence and the Robert Moses — which stretch across the a symbol of Canadian-American co-operation.

mark the birthday of the 10-year-old, officials from both of the border gathered at the site for a small celebration. Ontario Hydro guests included: Commissioners Ian F. Se and Lt. Col. A. A. Kennedy and Chief Engineer Harold



err'ional partners

Sister joins the fleet



Square-sterned beauty

Painted and beflagged, the motor vessel Canadian Progress was named recently by Mrs. Stanley J. Randall, wife of Ontario's Economics and Development Minister. The vessel has now joined her sister ship, Canadian Century, in carrying coal from Ohio to Ontario Hydro thermal plants.

Mr. Randall, who was the main speaker at the ceremony, reiterated the Ontario government's opposition to Ottawa's imposition of lockage charges on the Welland ship canal.

Built to maximum Seaway dimensions — 730 feet long, 75 feet wide and with a draft of 25.5 feet — the Canadian Progress will carry more coal through the Seaway system and will unload it faster than any other ship in the world. She is the fourth ship built at St. Catharines for Upper Lakes Shipping to carry coal for Ontario Hydro.

Capacitors

Ontario Hydro has launched a new policy to cover the installation of capacitors — largely at its own expense — on selected municipal utility systems. The operation, maintenance and installation of the capacitors will be negotiated in each case.

These capacitors will supply reactive, or wattless, power close to the load, thereby reducing voltage drop and power losses in the lines from the main system. Hydro has capacitors on its own rural and local distribution systems but practically no capacitors exist on the municipal distribution systems. These supply a total load far greater than Hydro's rural and local distribution network.

Over 100 capacitors will be installed on municipal systems during 1968. They will be concentrated in the Georgian Bay, Niagara and Western Regions.

Hi, neighbor

The Steel Company of Canada is to become a next-door neighbor of Ontario Hydro's Nanticoke generating station on the shore of Lake Erie, east of Port Dover. The steel giant has taken up options on 5,000 acres of property straddling Haldimand and Norfolk Counties.

Stelco Vice-President A. D. Fisher told residents not to expect the immediate establishment of a large plant. "It takes years to develop an integrated steelmaking operation and the first development at Nanticoke will likely be in the form of flat-rolled steel mills to supplement facilities at Hilton Works in Hamilton."

He did, however, predict that the Lake Erie development could become the largest steelmaking centre in Canada. The site, he said, offers room for long-range expansion, has a good harbor and is adjacent to the nation's largest manufacturing market. Hydro's 2,000,000-kilowatt power plant will produce first power in 1971.

Youth power



They're all good scouts.

Last month, 3,000 scouts converged on the Kelso conservation area near Milton to usher in the first-ever Ontario Jamboree. Typical of the movement's brotherhood ideals, it drew representations from all over the province, from other parts of Canada and beyond.

One of the interesting side trips was a tour of Ontario Hydro's Lakeview generating station. The scouts not only saw how the plant operated, but were shown the Hydro film, "The Greeks had a word". Looking over the many-faceted control room are: François Cachy, Gatineau, Que.; George Alberti, Ottawa; Donald Thompson, district commissioner, Niagara Falls; Luke Bouvier, Hull, Que; and their guide, George Findlay, an operator in training. A bus trip around the site followed, and then the group moved on to tour the C.N.E.

When all the heads were counted – 750 on each of four days—it proved to be the biggest number from one organization to have toured Lakeview.

Gently now

Ontario Hydro lines carrying up to 15,000 volts are being handled these days both with kid and rubber gloves. The idea originated with Jim Durand, Northwestern Region operations engineer, who theorized that the rubber-glove technique, which is used on lines up to 8,000 volts, could be used on higher-voltage lines with extra training and more care.

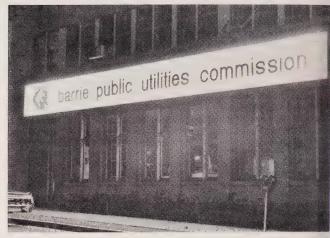
This summer, line crews in Port Arthur were the first to under-



Obviously this fits on top of this.

go training in the new technique, which includes classion cussion, work on a dead line, then about 30 minutes of we live line. Up to now, Hydro's linemen worked on lines 12,000 to 15,000-volt range with live-line tools. In generubber-glove technique is much faster. Line maintenal structor Bill Ryan is shown demonstrating the use of 1 gloves, working from a new type of platform attached note.

Unmistakable



Bayfield street beacon

There's no mistaking this building in Barrie...day or nigrear-illuminated sign is another step in the "new look" image made Barrie PUC a front-runner in Georgian Bay. The combas adopted more applications for the Hydro symbol to other utility in the region. Its vehicles, stationery an printed matter all sport the new design.

Honored

The 1968 "Man of the Year" award for outstanding se Canada's plastics industry has been presented to Andrew Burlington PUC commissioner and a director of the ON Frame has been technical manager of Farrel Canada since 1964.

Mr. Frame was honored for his leadership in presentiviews of Canada's plastics machinery suppliers to official Department of Industry during the establishment of the ery tariff remission program. He authored a brief outling problem areas and recommended specific government active remission program was instituted as part of the Kenned of tariffs.

June energy production

Primary energy provided by Ontario Hydro in J totalled 4.22 billion kilowatt-hours, an increase of per cent over the same month a year ago. For the 6 months of 1968, the total is 27.87 billion kilow hours, up 8.3 per cent over the same period last year

Adjusted for seasonal influences, primary energy mand in June was 4.49 billion kilowatt-hours, .03 cent more than the previous month. The seasonally justed total for June represents 53.83 billion kilow hours at annual rates. This is 386.96 per cent of energy demand in 1949.



ist a few years ago, Northeastern Ontario was arid. Blazing sunshine was the order of the rom early March to late December with only ccasional tropical shower to provide variety noisten the date crop in January or February. Is provided the only practical transportation peer was the sole means of survival for those eying between oases.

least that's how the inhabitants recall the before Hydro unleashed its rain making ines for a week in 1965. And it's been pouring since. So serious was the situation this her that the Tri-Town Chamber of Commerce imiskaming way offered a standing \$50 of for information leading to the discovery direct of any such infernal machine still in etion.

The North Bay Nugget points out, the reward os only to rainmakers of the scientific variety. a dancers and witch doctors aren't eligible."

thinking here appears to be that one or two machines were cut off from the main ty during Operation Mop-Up three years ago naware that an armistice had been signed, night on bombarding the area with rain. This tif thing did occur in the jungles of the theatre during the last world war and it's theatre during the last world war and it's theatre during the last world war and it's the that a bearded cloud-seeder or two the theatre during the Northeast squirting the may be found.

ward aren't likely to get rich. It might be far reffective to grant amnesty to wayward rainand offer a bonus to those turning in their lihent.

ther south, excessive heat has been more oblem this summer and we doff our hat to tawa lady who popped her girdle into the gator for a couple of hours prior to donning round on a sizzling golf course.

Plaway from the calorie cabinet during the calorie cabinet during the calorie cabinet during the color off period. Confuse madam's stocking off period. Confuse madam's stocking provided the cabinet and confuse madam's stocking off period. Confuse madam's stocking off period. Confuse madam's stocking are with Alaskan crab or jellied octopus, slap effect pumpernickel, and you have the basis tried. A snappy snack like this could stretch way to the surgeon's table with embarrassimal around. Some kind of explanation will be expected of a man who gave birth to a confuse period.

It would be interesting to know whether or not the average Canadian is really turned on by ING. This is the long range program designed to provide direction and minimize thumb-twiddling among our nuclear scientists for the next few hundred years and the Science Council of Canada thinks it's the kind of stuff the man in the street will really dig.

"We believe," the council happily opines, "that the ING project is sufficiently unusual, daring and even spectacular, that it can excite the public imagination and the national pride."

It should, since it's likely to cost about \$150 million, but we met a fellow the other day who didn't even know ING stood for Intense Neutron Generator. Another dolt of our acquaintance couldn't offer the vaguest account of its construction or purpose.

As the Science Council explains in layman's terminology, "The intense neutron generator is simply a machine that will create a high thermal neutron flux by firing an intense proton beam at a liquid metal target."

Fair enough, but to maintain a high level of interest in the project among our scientists, we would suggest that the liquid metal targets be animated and turned out in a variety of shapes such as ducks, deer and presidential candidates. This would tend to sharpen the aim of the boys behind the proton beams and give us more for our \$150 million.

"The key to the high neutron flux," as the council rightly stresses in its down-to-earth description, is the spallation reaction by which many neutrons at once are boiled off from the nucleus of a heavy atom as it absorbs the energy of a proton's impact."

Sounds something like a nuclear corn boil and it could add up to a grand evening's entertainment. Sharpshooters should be able to bag their limit of heavy atoms in the course of a few hours.

Frankly, though, our kilowatt-hour oriented imagination didn't really catch fire until we reached this paragraph in the explanatory brief aimed at the non-scientist (mentally retarded).

"The machine will consume as much power as it would take to supply the ordinary electrical needs of a city of 100,000 inhabitants."

That's different. Even if the number of citizens able to set up \$150 million atomic shooting galleries in their basements is limited, the potential is enormous. Seven or eight installations would equal the needs of a city the size of Toronto and that's not the kind of load a utility can ignore.

Let's hope it works. We'll be holding our breath until ING plugs in.

■ Elsewhere on the scientific front, controversy is raging over the intrinsic efficiency of the love act as performed by the common male mosquito (Aedes aegypti). According to the *Scientific American*, this character only requires from 14 to 20 seconds to accomplish the deed which eventually gives rise to clouds of baby aegypti.

Most admirable, one would assume, but it isn't all that cut and dried.

One reader suggests that these figures present a false impression. He points out that in measuring the efficiency of any mechanism, the time required for a defined function (one revolution of an impeller or one cycle of a four-stroke engine, for example), is directly proportional to the linear size of similar mechanisms. In other words, he con-

cludes that the mosquito, if projected to a creature 72 inches in length, would require between $1\frac{1}{2}$ and $2\frac{1}{2}$ hours to achieve the same results. Not a particularly impressive performance by any standard.

This is discounted by another reader who contends that meaningful comparisons can only be made with other species of mosquitoes and not with imaginary six-foot monsters. He quotes some pretty impressive sources validating performances ranging from 10 to 20 minutes for the Opifex foscus male mosquito to the much slower Culiseta inornata male requiring not less than three hours and 27 minutes.

This correspondent adds perspective to the disputation by introducing performance records outside the classification insecta. Fastest among the vertebrates is the Indian antelope, which has been clocked in fractions of a second, and the adult whale with elapsed times ranging from 20 seconds downward.

And so we come full cycle to the Aedes aegypti whose timing appears to be directly comparable with Moby Dick's.

Somewhere within this learned give and take there lurks a lesson and it probably has to do with the dangers of judging by appearance. The whale and the mosquito appear to have more in common than meets the eye.

This column was among the first to recognize the significance and potential of the all-electric toilet, which made its debut a year or so ago, and we were delighted to find that other facets of the Hydro organization are now showing interest. Johnny-on-the-spot where a good news story is concerned, we were agog with anticipation upon learning that some tests were being run.

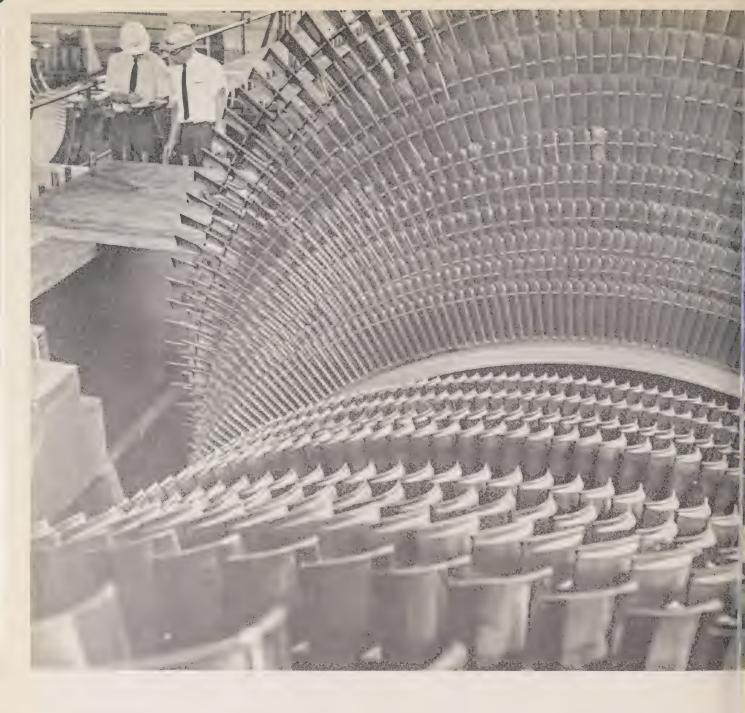
Pencil on the poise and camera at the ready, we set off in the hope of securing some rather unusual exposure. We expected to find half-a-dozen technical types ensconced on high-voltage chamber pots being fed closely regulated diets in an attempt to establish speed, endurance and efficiency standards as a guide to purchasing.

We never did get to the bottom of the thing. "You can say they seem to work," was the only response we could elicit before the iron curtain of official silence dropped back over the project.

But somewhere in the years ahead, perhaps at a lonely transformer station or on some out-of-the-way construction job, the quiet whirr of an electric incinerator will signal the end of the pause that refreshes. In rocky country, the electric toilet will be a whole lot more practical than blasting out a conventional two-holer.

If there was a kernel of comfort to be found in the postal strike it was the moratorium it offered in the matter of household accounts. That's why the mysterious arrival of our Hydro bill through a slot unsullied by monetary demands for more than two weeks left us of two minds. We didn't know whether to congratulate the utility for perspicacity in outwitting the mailmen or damn it for sneakiness in getting through to the family coffers.

Either way, this little display of efficiency is in direct contrast to the billing shenanigans of a local English gas board. It's been goading one lady with gas bills ever since she moved into her new, all-electric home more than 18 months ago. Undaunted by her protests, the board is now threatening to cut off the gas supply — which she doesn't have.



Follow the leader? What do you think? Hydro's \$528 million Pickering nuclear power station will eventually house four of these 540,000-kilowatt turbine generators. Weighing in at 2,100 tons and measuring 220 feet in length, this particular specimen is the largest in Canada. Huge units like this will produce substantial savings. They're just one of the reasons why Ontario's electrical rates are among the world's lowest. Electric power costs about the same today as it did 10 years ago. And there can't be many bargains like that!



TORONTO

PERIODICALS DEPT UN'VERSITY WEIRARRIA HEIHO · fall fair

taming a torrentport with a plan

ontario hydro news

october/1968





ontario nuoro news october 68

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the cover

It's almost that time of year . . . immaculately groomed livestock, poker-faced judges, the floodlit arena and all the associated hoop-la of Toronto's Royal Winter Fair. Of course, Hydro will be there. For Hydro's been down on the farm almost as long as there's been a Hydro. Now turn to page 12.

editorial board

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roon with view

There'll be both room and a view at Ontario Hydro's new head of to be built on the corner of University Avenue and College Street, Toronto, next to its present main building. Designed to accommodate up to 4,500 staff and with provision for expansion to the south, the building is a departure from the accepted office block design.

Rising 16 storeys, the structure will have floors of decreasing size from bottom to top. The exterior will be in natural textured concrete, with bronze-colored hermetically-sealed double glazing and anodized aluminum of the same color.

Outlining the need for a new head office complex, Hydro Chairman George Gathercole said the commission now rents 200,000 sq. ft. in downtown Toronto buildings, as well as occupying 325,000 sq. ft. in commission-owned buildings. To floor area of the new structure will be 1,021,474 sq. ft. Surplus space will be rented until it is needed by Hydro.

The architects, Gordon S. Adamson and Associates and Shore Moffat and Partners, have designed the building for the site



and oriented it to provide a minimum of glass exposure on the west and south. This will cut glare and provide the best in comfort and economy for its year-round, climate-controlled synthestepped front, overlooking Queen's Park, will have glass floor-to-ceiling walls to take advantage of the view.

Electricity will be the only source of energy and will be used it lighting, communications, computers and for powering everyth from office machines to 1,000-horsepower air-conditioning compressors. The heating will be derived from a heat reclaiming system, the main source being the lighting.

Starting date for construction of the \$28 million structure has r been set, but it is hoped that the new building will be available in late 1972 or early 1973. Almost a full year will be required to prepare working drawings and contract documents, then at estimated 33 months for actual construction.

rocky road to power

Hal O'Neil



the road is a wonder . . . boulders as solve sucking mud soulls a car down to the frame and a bure of ups and downs that would stice to the CNE rollercoaster.

ils the way to Lower Notch, where the illurness is being pushed back to add the potential of the nother hydro-electric station to the note that the note is the note is the note that the note is the note i

the construction of Lower Notch was unced last year, the bush road has its mark on many a vehicle. "The first came down the road, I arrived on minus a muffler and tail pipe,"

says security man Bud Hamilton, one of the few Ontario Hydro men on the job.

But things are changing. The last sixand-a-half-mile section of the road running south from North Cobalt to the Montreal River site is newly built and is to be turned over to the provincial highways department. The remaining seventeen miles are in the final stages of a complete face-lift including a new granular foundation and six inches of crushed stone surfacing.

Unlike most Hydro construction jobs, Lower Notch has been contracted out. H. G. Acres and Co., a consulting firm with considerable experience in this type of job, is responsible for both the engineering and for supervising the construction.

Field engineer George Cameron is another member of the Hydro team. For him, Lower Notch is somewhat of a frustration. "I'm used to getting my hands dirty. Here, I'm an observer and liaison man between Acres and Hydro," he explains.

Considering the number of northern projects he's been involved with over the years with Hydro, his attitude is under-

Workmen have blasted a 2,000-foot diversion tunnel, below and right, through solid rock to steer the fast-flowing Montreal River away from the site of the Lower Notch dam.

Photos by Ron Brown



ndable. Mr. Cameron moved to wer Notch from the Madawaska River piects in Eastern Ontario.

ny was it necessary to farm out this 1.1 million job? At present, Hydro's own ff are up to their ears in the design and astruction of a record program olving some 7.5 million kilowatts of clear, coal-fueled and hydraulic perating capacity. It has been policy to tage outside help at such times in er to maintain a relatively stable staff.

name Lower Notch is an appropriate
This particular section of the
Intreal River looks as if some giant had
ched a passage through the rugged
ain with a huge axe and laid the
wn-black river at its bottom.

Montreal falls 320 feet between Bay at Latchford and Lower Notch the mouth of Lake Timiskaming. At fent, four small stations further up the vitilize only 150 feet of this fall. The the 180-foot-high main dam to the up the sheer walls of the river aron, the generating station will take full dintage of the remaining drop. The its 14-mile-long headpond will out two of the small stations, ontain Falls and Upper Notch.

con the steep slopes of the gorge—
ing, drilling and clearing— has
ented interesting problems, some of
h have been regularly solved by a
a of man's oldest beasts of burden— the
bit. They step in where caterpillar
acrs or trucks cannot go. They even
bill them out at times.

Acres' man Archie Cox: "The horses to take a special delight in pulling delight in the tree. It's almost as if they as special gleam in their eyes."

enumber of the main dam can get under at This earth-filled structure must did 200 feet below the present bed

of the gorge, which over the ages has filled with tons of sand and soil.

Although not at the actual dam site, an Indian village of the pre-Algonquin era has been unearthed near the mouth of the Montreal. The discovery, believed to be 5,000 years old, was made by workmen digging sand to be used in station construction. A team of students from the University of Toronto has since turned up skeletons and many artifacts including flint scrapers and bits of pottery.

With the building of coffer dams and a 2,000-foot diversion tunnel, men working on the dam won't even get their feet wet. The tunnel was blasted through solid rock to accommodate the fast-flowing Montreal. Each end of the gorge will be sealed off by coffer dams to expose 2,000 feet of dry river bed in which to work. Tons of rock excavated from the tunnel will be used as part of the main dam.

Another big job will be the gouging out of an intake channel to carry water from the dam area to the penstocks of the powerhouse. It will be about half a mile long, 100 feet wide and 60 feet deep. The powerhouse will sit at the edge of Lake Timiskaming, taking full advantage of the falling water with its twin 122,000-kilowatt generators. Excavated materials from the channel will also go into the main dam.

While the terrain is rugged and the work heavy, construction workers have all the comforts of home within walking distance of the job.

A town has been created out of trailers, providing all the amenities of any modern community. It has a fire hall, street lighting, fire hydrants, recreation centre, even a school. The pleasant portables have been married into complexes, one of which consists of 17 trailers that can house 300 men, two to a room.

A dining hall-kitchen complex does the appetites of hungry work crews more than justice. Choices like roast beef, chicken



chop suey or a cold plate are regular noontime fare. They're augmented with slabs of pie or cake, home-made bread, fresh fruit and all the milk, coffee, tea or juice one can stow away.

Although there are fewer than 200 in the labor force at the moment, it will peak at 650 in mid-1969. First power is expected from the station in 1971.

"As the work force grows, our pots will get fuller. Instead of peeling four bags of potatoes a day it will be 14," says the chef.

In all, about \$1.5 million will be spent on room and board at the northern site.

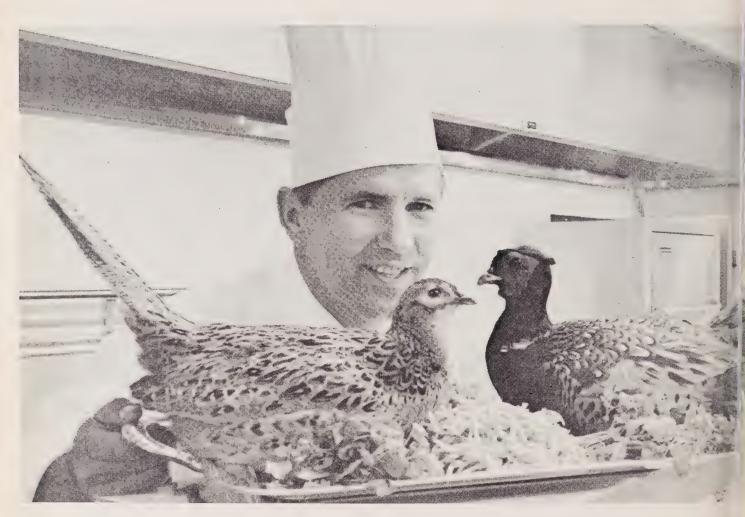
One innovation to make the scene at Lower Notch is a sauna bath. It was set up by a drilling firm to take the aches and pains out of workers' muscles. It's electric, of course.

M. F. Rodman, Acres' resident engineer, says there have been only two constant problems so far. One is the cold of winter. Not only men, but machinery slows down in temperatures which fall to nearly 50 below.

And the other problem? Why the road to Lower Notch. And that's just about solved. \square

king of the game binds

by Don Wright



they're doing very nicely in Ontario's banana belt

It can be a relatively direct route from egg to that gourmet's delight traditionally served under glass at the tables of the well-to-do, but the sidepaths devised for the sake of the nimrod are leading to a new place in the sun for the exotic pheasant.

In the process of providing frustrated sportsmen in the more populated areas with something to shoot at, the pheasant is adding to the income of a long list of people from the sports shop proprietor to the hatchery operator and from the

kennel man to the game farm owner. Pretty good for a foreigner!

Virtually the only pheasant to be found in Ontario, or anywhere else in North America, is a handsome, hybrid fellow with a very tangled ancestry. Predominantly Chinese, he also contains a dash of Korean, Manchurian, Japanese and Caucasian. But that's all in the past.

Through the brutal but efficient selection exercised by the New World climate, a mongrel pheasant has evolved which is "native" to North America and unique.

Known simply as Phasianus colchic our ringneck is well adapted to his North American range which, fortur !6 includes a fairly long strip of Ontaric

To plot the ringneck's Ontario habit just put him down in those souther. areas where the snowfall averages le 50 inches. This just takes in a narro belt along the lakes from Oshawa to Windsor. But it encompasses such heavily populated areas as Toronto, Hamilton, the Niagara Peninsula an

Hardy enough to withstand any col in weatherman can dish out, the ringnik



ound feeder and can't survive where snow is too deep. He does best in rich, avily-cultivated grain areas. None found in deep bushland or remote derness areas so that he's custom-made the weekend city hunter who must y pretty close to home.

e ringneck was introduced to Ontario eral times before catching on to a lited extent at the turn of the century the Lake Erie district. Good pheasant poting wasn't available until the 20s and it appears to have reached a max in the late 1930s. After a severe, tinent-wide decline in 1946-47. creasons no one has been able to point, the birds made a good comeback I now appear to be holding their n reasonably well. Unlike the ruffed juse (partridge), the pheasant does not low a cyclical rise and fall in quiation.

nekeeper to the people of the province, Department of Lands and Forests ell aware of the pheasant's value n era of declining wildlife and has opted far-sighted and effective sures in a continuing effort to ensure sportsman some return on his vast stmer.t in travel and equipment.

to the present degree of success has the township licensing scheme. pecial pheasant, fox and rabbit licence ow issued by 135 townships. Most flese are supplied with chicks or poults The department for raising and release Various local groups. This has tended lieve hunting pressure on the prime aral pheasant range and brought icing of shooting sports within the are of the Saturday morning nimrod.

her successful departmental move to rede pheasants for the peasants has the stocking of certain southern ^{rc}ncial parks and game management e with adult birds. For a modest fee, the urer can spend a day in the park during which, depending upon the ability of his dog, he may attain the three-bird limit.

Altogether, the department distributes some 65,000 birds annually and this stocking, together with a continuing program of study and vigilance, bodes well for the future of the ringneck in the province. At the same time, pheasant management is up against some adverse long-term factors which cannot entirely be overcome.

Changing farming techniques is one. With the trend toward larger and more specialized operations, fences have been coming down in considerable numbers and the plow put to the former overgrown fence-rows. This eliminates cover vital to the pheasant for nesting and to avoid predators. And the ever-increasing urban sprawl continues to eat up much ideal habitat so that no effort can be spared if the status quo of the pheasant population is to be maintained.

Private interests are also playing a major role in preserving the pheasant for gunners and gourmets who can afford to pay for their favorite pastimes. Mr. Big in this end of the business is undoubtedly Al Streib of the Aylmer area.

Upwards of 60,000 birds are hatched annually at his Uplands Pheasantry and while 90 per cent of them are slated for hunting, he's developed a nice Christmas business in dressed and handsomely packaged pheasant. "For the person who has everything," Al points out, "a brace of pheasant may be just the ticket." Last year, 2,500 people thought he was right. The gift package sells for \$12 and includes a three-pound cock and a smaller hen. Al says it will feed from six to eight persons. He figures he's got to charge \$1.75 a pound to make it pay.

The bulk of production at Uplands goes to township authorities, preserves and private clubs in Ontario and Quebec. The birds are sold either as day-old chicks, six-week-old poults or as adults. "The



Down on the modern pheasant farm, electric brooding lamps and incubators have a major role to play.

Hunters from both north and south of the border descend in droves on Pelee Island each fall. Right: birds at Aylmer's Uplands Pheasantry are reared in roofed-in wire pens to prevent their premature flight and thwart predator owls and hawks.



ringneck is fully colored-up and ready for sale as an adult in 18 weeks," Al explains.

April, May and June are the hectic months at Uplands when things, quite literally, "are busting out all over". During the laying season, birds are hatched at the rate of 1,000 a day and Al's battery of 12 modern incubators, each with a capacity of 3,000 eggs, is pretty well taxed to capacity. Electric brooding lamps keep the chicks warm for a week to 10 days and birds to be raised to the adult stage are confined under acres of wire pens. These are roofed to prevent the birds from flying off and to thwart owls and hawks who love to dine on such elegant fare.

Al stresses that pheasant raising is no quick road to riches. Aside from the substantial electrical bills associated with his highly-efficient, largely one-man operation, he picks up a really hefty feed bill. It works out to between 175 and 200 tons annually. It's a mixture of corn and other grains and costs at least \$100 a ton.

Another source of income at Uplands is a private hunting club. Members pay \$125 a year, which entitles them to 20 birds and five days of shooting on the 160-acre spread.

Much of the renewed interest in the pheasant as a game bird can be trapethe advent of the commercial hunt preserve. A development of the las decade, these establishments enably man with a little cash in his pocket pend a day on his own "private" of and virtually guarantee success. The also provide a bit of shooting before after the short township seasons have come and gone.

One of the best run and equipped is no outfit operated by Bob and Jack Krup almost within shotgun range of dov to Kitchener. Among the first in the business, the Krupp brothers won

od reputation by hard work and high neiples – not from any bias on our tin favor of the "Hydro family".

h of the Krupp brothers are Ontario fro employees. John is a line foreman Bob does mechanical maintenance of the Guelph area office so that game farm is strictly a week-end and day proposition.

e thought our 100-acre venture here uld remain at the end of nowhere east during our lifetime," Bob recalls, it Kitchener has been coming closer closer. It looks as if we'll have to sell ore long and, in any event, we intend to it easier."

he height of their activities, the Krupp hers raised about 3,000 birds annually catered to as many as 500 hunters September 1 to March 31 – the game rerve season. Up to 100 birds were and in a single day.

most preserves, the Krupps charge a day per hunter. This entitles him to birds, and while they can promise to the quota within gun range don't hold themselves responsible roor shooting. They also provide the pound the shooter prefers his Good dogs, according to Bob up, are half the fun of shooting.

favor springer spaniels and Labrador trvers, both flushing dogs, but many peir regular customers prefer pointers a ock on the bird's scent until the urer arrives. Either kind, a dog is tally essential in pursuit of the wily desant who would just as soon scoot on the ground among the brambles cristalks where he's a whole lot fethan in the air.

ornon practice is to release the birds an up root so before the hunt and if this too much like shooting fish in a rg, a day on the Krupp preserve lispel any such notion. Its rolling



acres and heavy cover come as close to natural pheasant habitat as it's possible to get and the birds can do a lot of hiding in an hour. Bob figures about 400 birds escape preserve boundaries each year—their gift to the surrounding township.

Current Lands and Forests records list 33 licensed game preserves, but many of these are private clubs – some run by big industrial companies for clients and employees. Perhaps 10 are of the public variety of the type operated by the Krupp brothers.

Bob Krupp foresees more and more "paid" hunting as land available for public use grows more scarce.

Wives probably hope he's right. They'd like to have father return from the hunt with his trophies neatly dressed and ready for the oven. At the game farms you can trade in your birds for ones fresh from the freezer.

pelee island pheasants

No discourse on pheasants in Ontario would be complete without some mention of Pelee Island, which is knee-deep in ringnecks and mighty happy about the situation.

This 10,000-acre island in Lake Erie is the most southerly part of Canada and

undoubtedly the only place in North America where the pheasant plays a major role in the economy. Although down from peak years, it still boasts the highest known pheasant density in the world.

Commenced in 1934, the annual Pelee Island pheasant hunt, now held in two stages, attracts gunners from across the province and many parts of the United States.

Some 1,400 hunting licences at \$40 each are issued each year. Add to this the income from hunter accommodation, kennel facilities, guiding and local transportation and the economics of the situation become apparent. Only about 80 families reside on the island.

Among the work financed largely from hunting revenues is the engineering associated with drainage and soil erosion problems on the island.

To ensure a continuing high degree of hunter success, island authorities have been supplementing the native pheasant population with purchased stock. But on Pelee they continue to regard the pheasant as a leading cash crop. It's been estimated as high as five birds to the acre.

port of toronto

A big, white freighter with the hammer and sickle on the funnel lay alongside the dock, a stevedore waved at a Russian seaman standing by the ship's rail.

"Hey, Tovarich," he called.

The Russian looked around conspiratorially, smiled and shouted, "Hallo Canadjan."

This is the Port of Toronto where hundreds of ships from across the world leave their cargoes piled high in the terminals. Beer from Germany, cameras from Hong Kong, fruit from Australia – name the cargo and somewhere in the port you'll find it waiting to be moved.

Toronto is the biggest port on Lake Ontario, partly because of its ideal location and sheltered harbor but also because of the Toronto Harbour Commission's experience and foresight in port planning.

While other lake ports thought their success was assured in the post-Seaway days, the THC reorganized and rebuilt for the increased traffic. Today its facilities for handling overseas cargo are less than 10 years old.

Says Seaway president Pierre Camu: "Immediately following the opening of the Seaway many Great Lakes port authorities hoped to become seaports overnight.

Things did not happen that way. In fact, only well established ports with the necessary facilities and equipment as well as experience were in the race."

The Toronto Harbour Commission was organized in 1911 as the sole agency for port administration. It owns the port terminals, cargo-moving equipment, heavylift cranes and two tugboats. It assigns ships to berths, attempts to keep delays to a minimum and maintains a central control over port activity.

Before expanding, the commission collected information from port authorities the world over. From data gathered, it designed terminals, sheds and installed equipment. Truck bays, customs facilities and roads were constructed so that unloaded cargo could be moved quickly to its destination.

THC's current coup is a multi-million waterfront redevelopment plan, the objective of which is to provide for further port needs; create a modern downtown airport; create the new Harbor City housing 50,000 people; and enlarge and improve waterfront parks. A new outer harbor, almost as large as the existing one, is being constructed by extending a

breakwater 200 feet wide and two miles long into the lake.

Deep sand deposits – littoral drift ut 150 feet thick stretching toward Etobicoke on the lake bed from th Scarborough bluffs – will be dredge used to create new land areas for 19 airport and harbor city.

Eventually, the breakwater, a circul headland off the downtown water will be wide enough for a road, sheds, storage areas and other por facilities. Although the plan may tayears to complete, the new harbor be operational by 1980.

Ontario Hydro is assisting the propand solving one of its own proble. The Harbor Commission is using fash from the nearby Richard L. He generating station to build a better land while Hydro has found a corplace to dispose of the residue fro coal burned at the station.

Fly ash is ideal for land fill. The firmaterial is sandwiched between constructions and filters through the cracks would later cause surface holes are hollows as the land settles. When the Hearn station is on full load, about trucks dump 700 tons of fly ash dat the headland site.



cities grow more crowded, the idea of g port areas for high-rise develop- it is becoming more acceptable.

Conto – ahead of other cities – has it trying to get a plan of this kind off the fund for six years. Concurrent with charbor redevelopment is the \$85 million to apartment-office complex at cottom of Bay Street. But the project abeen plagued by financial diffices, stemming from the Atlantic coptance collapse.

tast some of the development is moving ad, however, and THC Trade and ellopment Director Ed Hopkins says commission has agreed to advance with the construction of a \$400,000 ferry mal to replace the existing terminal at electron of Bay Street in an effort (/e Marvo additional time to secure existing.

ornto, along with Hamilton, accounts remajority of Lake Ontario traffic.
1958 the port's tonnage has classed about 25 per cent. About one-irof the port's total business is releas tonnage, which has increased to 500 per cent since the Seaway leed. Today, Toronto is a port of call

for almost all the ships which pass through the Seaway into Lake Ontario.

Last year, foreign ships arrived in Toronto from 169 ports in 60 countries and ships leaving Toronto went to 157 ports in 66 countries. Toronto is largely an import harbor because Metro's two-million-plus population lives in a 240-square-mile area, and increases at more than 50,000 annually. In any league, that's quite a market.

Currently, coal for Hydro's generating stations forms a large part of the total tonnage moved on the lake.

Recently, Metro chairman William Allen pointed out: "Metro Toronto is the most affluent individual market in Canada today. Over one-third of the nation's purchasing power is within 100 miles of Toronto.

"It is the financial, distributing and manufacturing centre of Canada. Monthly financial house clearings reach an average of \$12 billion. Industrial production averages \$4.2 billion and retail sales \$2½ billion annually."

A port in that kind of neighborhood just has to grow.

Supporting the 12 miles of waterfront quays that provide berths for some 70 vessels are brand new freight handling and

transportation systems. Terminal operations director Captain Walter Culbertson favors palletized and containerized cargo handling. Palletized goods are stacked on small wooden platforms and containerized goods are packed in very large boxes.

As well as being faster and cheaper, containerized cargo can be discharged at 80 to 100 tons an hour while a three-hour, loose cargo handling job can be reduced to about half an hour if pallets are used.

There are also human hands aplenty. Seven stevedoring companies – who act as hiring agents for about 600 long-shoremen – organize the loading and unloading of ships.

Standing like a sentinel over the harbor area is Atlas, the \$400,000 dockside crane that can lift 300 tons in one lump. The 143-foot-high monster sits by terminal 35 and nonchalantly manhandles cargo too heavy for other equipment. Atlas gets his superstrength from two electric motors with a combined rating of 112 kilowatts. About a mile and a half of cable winds over the crane's pulleys. In addition, the port has a 50-ton marine derrick,

Cameras from Hong Kong, fruit from Down Under, coal from Ohio and Nova S

Brand new power transformers, slightly less-than-new streetcars . . . the Port of Toronto handles them all.



mobile gantry cranes and special purpose fork-lift trucks of 20-ton capacity.

Although some cargo is moved by rail, Toronto is mainly a trucking port. Excellent roads service the harbor and port officials say that trucks will continue to handle most of the cargo.

Toronto banks help the port, too. Shippers doing business in the Port of Toronto have bank services extending to almost every part of the world for the collection of drafts and notes payable and in the processing of necessary documents for the movement of cargo.

The port has one of the most advanced police forces to combat pilferage. Port security is the toughest and tightest on the continent. Losses at Toronto are light compared with such places as New York, where a whole bargeload of new automobiles disappeared on the Hudson River a few years ago.

The Port Police are divided into two sections – uniformed personnel and an investigation squad. The former's responsibility is to patrol terminal and dock areas while the latter work with the port's traffic department.

Port police are under the Police Ac of Ontario. Members of the force are obligated, once they take oath, to all provisions of the criminal code other federal and provincial statute to the same extent as any police consistence.

Commenting recently on the port p of Ernest B. Griffith, THC general man esaid the organization of the force is no indication that theft and pilferate worse in Toronto than any other position that the port is with take aggressive steps to protect its growing trade.

it all adds up to Canada's biggest economic bonanza



inv reckoning, the effect of a projed shipping stop on the Seaway is bus for Toronto. The port stirs up but \$150 million of economic activity fally – about \$75 for each Metro onto inhabitant. If shipping were trupted, about \$500,000 a week in es would disappear and prices for lumer goods that used to land at the would increase. Foreign shipowners exporters hurt financially would fably take a long time to forget – in they might not forget at all. It is busly in Toronto's interest to help the traffic moving as smoothly as

etion 12-month Seaway operation to a plof Toronto man and his eyes light with port now handles overseas at for about two-thirds of the year. If e ort were open for the whole year, his revenue would probably go right off ethart. Currently, the port must perfect the at full efficiency during the navitation season and revert to hibernation in either. The thought of millions of other in plant and equipment doing the port officials cringe.



According to Pierre Camu, the other Great Lakes ports feel the same way. The Seaway authority has invested heavily in equipment designed to prevent ice formation in the locks. Heaters and compressed air bubbling gear have been employed with some success although the icing problems require further study.

Earlier this year, a Canadian scientist suggested that waste heat from carefully-sited nuclear stations could be harnessed to extend the Seaway season. He estimated there would be sufficient nuclear

capacity along the Seaway by the year 2000 to limit the formation of ice.

The impact of such a nuclear bonus upon the Port of Toronto would be nothing short of fantastic.



candy flos

A potpourri of scenes that capture the atmosphere of the "Royal." Bottom right, farm sales manager J. E. Moles talks to visitors at the Hydro exhibit. The 1968 fair opens November 15.

photos by Harry Wilson





Ordinarily, cattle buyers from the Argentine and Japan, stetson-hatted ranchers from the Prairies, sticky-fingered candy floss kids and bemedalled gentlemen in hunting pink have little in common. But for one glorious, rambunctious yet elegant week each November they rub respective shoulders at one of the world's leading agricultural get-togethers -Toronto's Royal Agricultural Winter Fair.

Now in its fortieth year, the Royal is indeed a study in contrasts. Gleaming rows of farm machinery, the colorful flicker of tropical fish, the bleat of sheep and the hushed expectancy of the show jumping competitions all add to the effect. The modest admission fee may stretch the family budget of some newly-arrived immigrant; an Indiana breeder may walk away \$9,000 richer for the sale of a year-old bull.

While it's one of the biggest indoor farm shows in existence, the Royal caters mainly to urbanites. Three-quarters of its visitors are from the town or city. "This explains the diversity," says the fair's general manager, Bill Watson. "It may be a bit extreme, but we even have a competitive class for goldfish."

In more serious vein, the Royal provide a greater stimulus to agricultural expl than is generally realized. "We attrib buyers from all parts of the world," says Mr. Watson. "They make some purchases at the fair, but most of th deals are negotiated elsewhere in C a

Ontario Hydro has long had an ex il at the Royal, continuing a tradition established by first chairman Sir Ac h Beck when he set out in 1912 to w farmer with two mobile displays. Ty put on demonstrations at farms and country fairs to show how electricit would eliminate drudgery and imp VE living conditions.

& hunting pink









Arresults, especially since Hydro inded its rural network immediately the second world war, have been induitionary. In the decade up to 1963, wastance, Ontario's farm cash income cased by one-third. And this in spite of corease in cultivated acreage and a 2 or cent reduction in the agricultural beforce.

hen the fair opens next month when the fair opens next month when the fair opens next month have been so that as it should be considering sen responsible for much of the left and air of opulence that makes the only what it is.



by Ted Leather

Casimir

engineer extraordinaire

Builders of the Canadian nation — at least the ones mentioned in school history texts — have usually been politicians or soldiers. The writers of laws and constitutions and the bearers of arms certainly played their part. But when it comes to nation-building, our textbooks have sadly neglected the engineer.

One, in particular, deserves better. Sir Casimir Stanislaus Gzowski pioneered many of the roads, harbors, canals and railways so vital in conquering a continent and making Canada a fact.

Gzowski was more than an engineer, however. Soldier, lawyer, financier and businessman were other roles he played. He was an important figure in the upper class society of Toronto in the 1800s, a friend and confidant of prime ministers and politicians and of visiting royalty from England.

The top of Toronto's Tory, United Empire Loyalist society was an odd place to find a Polish immigrant who had been jailed in Austria for revolutionary activities.

Gzowski was born March 5, 1813, in St. Petersburg, Russia, the son of a Polish nobleman and officer in the Imperial Russian Guard. He was educated in Poland at the Lyceum of Krzemieniec. There he received his military and engineering training.

Even at this early period, we are not left with a fleshless portrait recording only his birth and schooling. Gzowski was 17 when he graduated from the Lyceum in 1830 with a creditable academic standing. He immediately announced the kind of man he was. The Polish uprising against Czarist Russia began that year. Gzowski was one of the young officers in the revolt.

His first taste of combat was in the corps of General Dwernicki, a distinguished Polish soldier who had won fame early in the century fighting with the armies of Napoleon. Gzowski's noble lineage and his training as a military engineer could have provided a rewarding career in the vast empire of the Czars. This he sacrificed for a belief in Polish freedom.

Dwernicki was killed in the action, the corps defeated and interned in Austrian Poland. With the loss of a brilliant leader, the uprising was crushed without achieving Polish liberation. The fate of Gzowski and his fellow internees hung in a delicate balance several times as Austria and other Congress of Vienna nations engaged in diplomatic manoeuvrings. Finally, deportation to the United States was agreed and Gzowski landed in New York in March. 1834.

Gzowski faced the New World with a desire to make a new life. His first need was a knowledge of the English language. He began studying English and supported himself by giving lessons in German, French and Italian. Lessons in fencing and drawing were also provided by the young aristocrat and ex-rebel.

To perfect the English he'd need for success as an engineer, Gzowski articled himself as a student in law in Pittsfield, Massachusetts. After three years of studies, he passed the legal examinations and was admitted to the bar in 1837. He had by this time become a U.S. citizen and practised law in Massachusetts.

Later, he worked for a U.S. engineering company engaged in railway and canal construction in Pennsylvania and Ohio. The company was also looking for some lucrative contracts in the Canadas, where transportation needs were developing and facilities were being built.

In 1841, Gzowski was sent to Canada with his American wife. His job was to look for engineering work for the U.S. firm.

While staying at an inn at Kingston, Ont., Gzowski met Sir Charles Bagot, governor-general of British North America. At first he was concerned when Sir Charles inquired after him. Why wou crown official, an assured imperialist want to speak with an ex-rebel Pole turned American engineer?

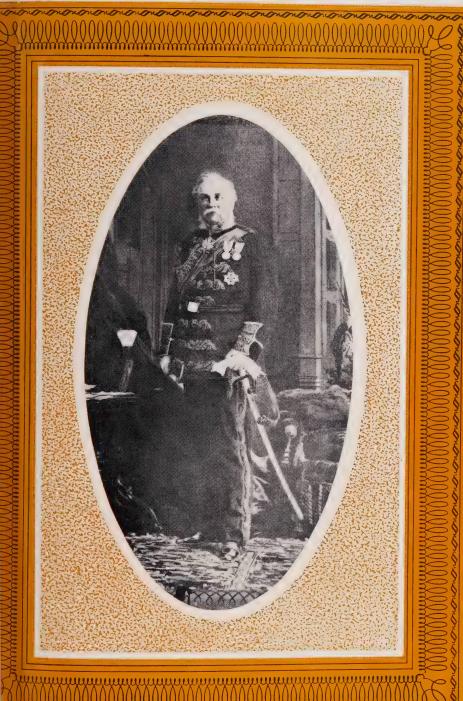
Bagot had met Gzowski's father whei diplomatic mission in Russia. He too immediate liking to the younger Gzc and was quick to point out the oppotunities in Canada for an ambitious engineer. Through Bagot's influenced Gzowski was appointed superintenc roads and waterways in the London district of Upper Canada, now Onta During this period, one of his project surfacing Toronto's Yonge Street be Lake Ontario and Lake Simcoe. In 1846, he became a naturalized Bri subject and left government service the Upper Canada Mining Co. Later worked as an engineer on Montreal harbor, at the same time acting as a sultant on shipping channel improv ments between Montreal and Quet

Railway construction was a corners of economic policy in the Canadas late 1840s and 1850s. Some saw pla Montreal-St. Lawrence route for grexports from the U.S. midwest to Ecowski involved himself in railroad development. Until 1853 he was a construction engineer for the St. Lawrence and Atlantic Railway. Then, in particular with Sir Alexander Galt and other notables, he founded Gzowski and a contracting firm.

First contract for the firm was the boof a section of the Grand Trunk Rail afrom Toronto to Guelph. Permission areceived from the legislature to extend the line to Sarnia. In terms of the among capital required, building of the Grant Trunk Railway was the largest sing investment project undertaken in Capital to that date.

The Grand Trunk contract was rew for Gzowski's firm and for him perso

GZOVSki



But the rewards were justified. An English inspecting engineer, reporting to the government, said the line was built "with an excellence of workmanship far beyond the requirements of the contract".

With the Grand Trunk project completed to Sarnia by 1859, Gzowski went on to other railway projects in Ontario. But he was a man of many talents and did not long concentrate on one to the neglect of others.

A secret Irish revolutionary brotherhood, known as the Fenians, was formed in New York in 1858. In succeeding years, as part of their anti-British campaign, the Fenians launched some raids into Canada.

Gzowski's family background, education and first adult experiences had a military flavor and this interest was never lost. During the period of Fenian attacks, he toured the Niagara border areas, developed plans for defence against Fenian activity and urged on the government the necessity of developing a strong militia.

The Fenian raids were an annoyance to Canada and an embarrassment to at least some U.S. officials who no longer toyed with annexation hopes. Canada became a nation in 1867 and trade between it and the American states was an important part of the economy.

In 1873, Gzowski and Co. designed and built the International Bridge between Fort Erie, Ont. and Buffalo, N.Y. In this project, Gzowski's engineering abilities showed themselves well. The difficulties faced were enormous. The bridge was to span the start of the Niagara River, where the depth of water was up to 50 feet with sudden and considerable fluctuations. A southwest gale across Lake Erie could raise the water level several feet and double the speed of the current. Winter construction was impossible because of the masses of floating ice. During the navigation season, river rafts of



Unveiling of the Gzowski monument last May was performed by Prime Minister Trudeau, seen here with Toronto Mayor William Dennison.

Globe and Mail

enormous and unmanageable proportions posed a constant threat to caissons. The treacherous current varied from five to 12 miles an hour.

The difficulties were overcome and the bridge completed. But it wasn't the only challenge thrown to Gzowski by the Niagara River. His attention now focussed on Niagara Falls.

The falls were a great tourist attraction, but their natural beauty was threatened by cheap sideshows and commercial concessions. A report to the Ontario government recommended the creation of parklands in the area. In 1880, the legislature passed a bill providing government maintenance of the park.

The Niagara Parks Commission was created with Gzowski as its first chairman. No idle figurehead, he had much to do with the practical work of laying out and designing the grounds. In a letter to Sir Oliver Mowat, then Ontario premier, Gzowski said: "The preservation of so magnificent a feat of nature for the public use . . . is, I think, sufficient answer to the question of usefulness."

But power, as well as beauty, intrigued the engineer in Gzowski. On a trip to England in 1891, he visited a pioneer of the British electrical industry, Sebastian de Ferranti. Here he saw Ferranti's experiments in the transmission of electric power. He was a supporter of a syndicate that included Ferranti to develop electric power from Niagara's waters. In 1892, the Canadian Niagara Power Corporation was formed and a powerhouse was built on the Canadian side of the river with transmission lines running to Fort Erie and Buffalo.

Another syndicate in which Gzowski had a financial interest built an electric railway from Queenston along the bank of the river to the park at Niagara Falls. The railway was an early customer of the power corporation.

A recital of Gzowski's achievements as an engineer and builder tends to obscure the fuller picture of the man who was a social being, not just a draughtsman laboring over his construction projects.

The Hall, Gzowski's home on Toronto's Bathurst St., was a meeting place for the social, political and business elite of the young dominion. English nobility was entertained, reflecting his close friendships with successive governors-general. In 1879, he was promoted to the rank of colonel in the Canadian militia and appointed an aide-de-camp to Queen Victoria.

Gzowski was a good friend of Sir John A. Macdonald and was one of two administrators that managed the prime minister's business dealings to free him for political activity. Gzowski continued these services for Macdonald until the politician died.

Music was a part of Gzowski's life. He played the violin and during the 1880s served as president of the Toronto Philharmonic Society.

He was a founder and early officer of the Canadian Society of Civil Engineers, later the Engineering Institute of Canada. He gave funds for the annual presentation of a medal to a society member for the best paper dealing with an engineering problem important to the progress of science. He founded the Ontario Jockey Club and was its first president. He was a co-founder of the Toronto Club and the Toronto Stock Exchange.

Gzowski was a financial adviser to the University of Toronto and a member of its Senate for many years. He was a cofounder of one of its member colleges, Wycliffe College.

In line with his military interests, Gzowski founded the Dominion Rifle Association, was its president for 16 years and was instrumental in sending and financing the first Canadian team to compete at the Empire shooting contests in Wimbledon,

England. The Gzowski Trophy is still awarded to the best infantry regimer militia and another to the best militiof the Royal Canadian Engineers.

In 1896, he served as administrator or Province of Ontario in the interim perbetween the death of one lieutenant governor and the appointment of the next. This was his closest personal involvement with politics. It seems sthat this man of action, who had clost friendships with politicians and stror personal opinions, should remain out the political arena. He had an influe politics and the views of such a weal and talented man were listened to viespect, but he never stood for elect

Gzowski died in Toronto in the Aug of 1898, but not before he received honor of knighthood from Queen in recognition of his services to Can in the education, military and engine fields.

More recently, on May 25 of this ye, he was honored by the unveiling of monument in Sir Casimir Gzowski F Toronto's Lakeshore Blvd. The men structure, designed by architect Ric D'Wonnik, contains a bust of Sir Canand memorabilia of the great engine relating to his activities in so many for

The monument was a project initial by Dr. Z. Przygoda, of the Associatic Polish Engineers in Canada, and its \$50,000 cost was contributed by industries, ethnic groups, engineeri societies, clubs and individuals. Pri Minister Pierre Elliott Trudeau unvermonument in a ceremony attended more than 5,000 people, many of working may remember to list Gzowski, the engineer, with the politicians and good as a builder of modern Canada.

power is their business

Now's the time of year to roll up sleeves and get back to work with renewed rigor. This is exactly what the Ontario Municipal Electric Association does each fall and last month's round of district meetings was no exception. Included here are reports from sault Ste. Marie, Muskoka and Kenora.



Veteran Espanola Hydro commissioner J. F. Boucher, left, and Ontario Hydro Chairman George Gathercole meet at the registration desk at the Northland Municipal Electric Association meeting in Sault Ste. Marie.



ecent on marketing

In-flying transmission lines and speclear power developments may be the lear kids of Hydro progress but, in the analysis, they all add up to kilowattos. And it's the sale of these units of angy that make the financial wheels

at's why marketing came in for a good of the spotlight at the joint annual orention of District 9 OMEA and the Chland Municipal Electric Association el last month at Sault Ste. Marie. Other area of from public relations to the Smith of the Smith of the satisfactory of the satisfactory

his "state of the region" address, oneastern manager T. E. Flinn pointed particular pride to success on the

home heating front. He quoted DBS statistics to show that of 1,686 new home starts in Northeastern Region in 1967, 822 – or 48.7 per cent – were electrically heated.

Mr. Flinn singled out the tiny town of Webbwood, where all four homes built so far this year have been electrically heated, as an example of what can be achieved in a small utility through the interest of the local commission and staff. South River and Massey were other communities winning accolades for electric heating success.

Mentioning that North Bay Hydro had recently appointed a marketing supervisor and that Sault Ste. Marie was considering a similar appointment, he recommended a sharing of personnel as one way smaller utilities could avail themselves of marketing specialists. He said the Hearst and Kapuskasing PUCs had arranged to use the services of an area sales representative on a part-time basis and that several other arrangements of this nature were in the offing.

Delegates to the District 9 meeting also learned the whys and wherefores of Hydro's over-all marketing concept from D. J. Gordon, assistant general manager – marketing.

Mr. Gordon said that electric heating now represented a connected load in excess of a million kilowatts on the Hydro systems in Ontario. Based on revenue of \$200 annually for a single dwelling and \$100 for a multiple dwelling unit, residential electric heating revenue amounted to \$9.9 million in 1967 and \$30 million since 1959.

Because the electric heating load does not occur at the same time as the system peak, electric heating helped fill in the valley in the winter daily load curve, but did tend to accentuate the difference between the summer and winter peaks, which is about two million kilowatts. Air-condition-

ing was the most obvious way to narrow the seasonal gap, said Mr. Gordon. He noted that some utilities south of the border and some "not too far south" regularly experienced a reverse situation with the annual peak occurring in the summer due to the cooling load.

Mr. Gordon used some water heater figures to suggest the value of a sound and vigorous marketing program in retaining load which would otherwise be lost to the competition.

"If our assumptions of estimated potential water heater losses are correct," he said, "we have retained some 335,000 units which could have been lost to the competition without our determined effort in this market. Based on an average annual revenue of \$40 per unit, this amounts to \$13.4 million for 1967 alone."

Turning to the future, Mr. Gordon said that a full-scale program aimed at the conversion market for electric heating would be launched next spring. He said the total comfort concept (heating-cooling, humidifying and de-humidifying) was being carefully studied as were problems associated with servicing electric heating installations.

Naming the ingredients required for a successful municipal utility marketing operation, he said:

"There are many factors, but in my view I would place a clear-cut recognition of the need for marketing, strong support of the local commissioners, an enthusiastic, aggressive, customer-oriented manager or superintendent and good planning at the head of the list. And I don't believe the size of the utility has very much to do with it."

The speaker cited Compec (Co-operative Marketing Plan for Essex County) to illustrate how small and medium-sized utilities can work together effectively. In Essex



Heading the Northland Municipal Electric Association for the coming year are R. F. Eddy, Sault Ste. Marie; Roland Marleau, Sturgeon Falls; Ralph MacKay, Thessalon; H. A. Prescott, Capreol, 1st vice-president; E. C. Dash, Sudbury, president; D. G. Hugill, Sault Ste. Marie, 2nd vice-president, and Ronald Duncan, Coniston, secretary-treasurer.



Ontario Hydro Chairman George Gatherouright, presents long-service award to C.J. Murphy, a 25-year member of the Sault Ste. Marie PUC.

County, 14 utilities with help from the Ontario Hydro regional office had adopted a uniform marketing approach and it was paying off. In this area of long-established and aggressive gas competition, he said, these utilities were managing to penetrate the market for electric heating in new homes to a degree far above the provincial average.

In the long run, Mr. Gordon concluded, the one who gains most from utility marketing is the customer.

"He gains by having a utility that will react to his wants and needs, a utility that will not only react but anticipate his wants and needs, and a utility which is truly interested in his welfare by selling him the best dog-gone product and bargain in town—the low-cost kilowatt-hour."

Delegates were also served food for thought in the matter of public relations. They heard Mrs. Phyllis Brebner, associate editor of the Meaford Express, describe Hydro from two distinct vantage points — the news-oriented editor's chair and the lady customer whose concern with things electrical is encompassed by the four walls of her home.

Describing the results of his travels as chairman of the District 9 PR committee, E. C. Dash, president-elect of the district, said: "Any doubts as to the value of a PR program appear to have vanished in this area. It was encouraging to find our utilities getting on with the details."

He was enthusiastic about the results of a questionnaire Sudbury Hydro has sent out to its customers probing their attitudes toward the local Hydro service. He said returns were 13.2 per cent while two per cent was considered good in this sort of survey.

Full satisfaction was registered on 78

per cent of the 2,000-odd returns. Customers' suggestions ranged from requests for lower rates to the provision of plug-ins for auto heaters on cold Sudbury streets.

Mr. Dash was less enthusiastic about the district's response in the matter of resolutions. Only two were presented, both dealing with insulation for electrically-heated homes. They recommended that Ontario Electrical League standards be adopted by the National Building Code and local building codes.

"What has happened to District 9?" Mr. Dash asked. "Resolutions don't have to be destructive and full of complaints. They can be meaningful and helpful. They'll be high on my list as I journey about the district during my term of office."

Retiring district president D. G. Hugill, of the host utility, welcomed delegates to the Sault. He said they were hosts of the largest public utilities commission in the province. It consists of a chairman and six commissioners, including the mayor.

He also tendered a hearty vote of thanks to Wes Cooke, of North Bay Hydro, for serving five years as secretary-treasurer of District 9. Ron Duncan, of Coniston, takes over these duties.

industry booms in northeast

T. E. Flinn, new manager of Ontario Hydro's Northeastern Region, outlined his territory's booming industry at the joint fall meeting of District 9 OMEA and the Northland section of the AMEU.

He said the recently announced \$85 million International Nickel refinery for Copper Cliff would mean an upward revision of power requirements for the Nickel

Belt area. These had been previous mated as doubling to 700,000 kill by 1973.

To cope with the expanding load, Hydro is planning to double transcapacity supplying the Sudbury d 44,000-volt sub-transmission sys 1970.

Rural and municipal loads in the Belt will grow an estimated 15 per each of the next five years, about the normal growth rate, said Mr. F

Turning to Sault Ste. Marie, site meeting, the regional manager tol gates that the Algoma Steel Compabuilding a new mill which would pheavy steel plate up to 160 inches

"The power requirements of the second largest steel complex in () will double within the next two he added.

Mr. Flinn mentioned the smooth is tion of the staff of the former Nor West Ferris and Widdifield utilities is team. North Bay was going ahead plans for a modern all-electric off service centre. Chapleau Hydro will planning a new building.

Turning to rates, Mr. Flinn said the North Bay and Chapleau were adopted new general rate structure, which reseparate commercial and industrial rates.

He told delegates that several amage at tions had been approved or were a consideration by the Ontario Mage Board. Among them were the joing Calver Township to the town of law Falls, the application of the municipal Black River to annex the town of Mage and the application of Capreol-Hall e annex Blezard township.



Thomas Stevenson, newly-elected president of District 2 and chairman of Chesley PUC, receives award for 15 years' service.



New executive of Georgian Bay Municipal Electric Association includes, front row (left to right): N. H. Robertson, Owen Sound; A. McAuley, Elmvale, 1st vice-president; T. Stevenson, Chesley, president; W. R. Tomlinson, Port Elgin, 2nd vice-president. Back: W. E. Theaker, Paisley; Bill Boyes, Alliston; D. A. Watt, Orangeville, past president; John Allison, Collingwood, and W. L. Logan, Midland.



ord year on the

nrio's economic growth may raise by demands by a record amount before elear is out, Ontario Hydro Chairman ege Gathercole told delegates of the egian Bay Municipal Electric Association of the Muskoka meeting.

"or the first seven months of this year, 16ty consumption was up 8.6 per cent," Sathercole said. "If this trend connus, it will mean an incremental increase chand of more than 750,000 kilowatts largest year-to-year increase ever plenced."

God progress was now being made on onstruction projects and the rise in important matched by an pited 800,000 kilowatts of new generacapacity.

the time of the winter peak, we old be in a slightly better position than ere last year," Mr. Gathercole said. ever, our reserves remain at a lower

level than we think desirable and we are proceeding vigorously to have more generating units brought on stream."

Mr. Gathercole said the next decade would see the introduction of an additional 13 million kilowatts of generating capacity, most of it from nuclear or coalfired stations. Large nuclear stations could produce base-load energy substantially cheaper than coal stations of similar size, but the choice between coal and nuclear must be accompanied by a sense of realism and practicality.

"Our projections suggest that nuclear generation involves an outlay of \$244 a kilowatt compared with \$133 a kilowatt for a fossil-fuel station. Thus nuclear represents a substantially higher investment of scarce capital."

Calling for co-operation to try to reduce the pressure of inflation, Mr. Gathercole said that interest rates on Ontario Hydro bonds had risen 40 per cent in five years and 60 per cent in the last 10. A recent \$65 million bond issue bore a coupon rate of seven per cent. Wages and salaries had risen by 25 to 30 per cent over a five-year period.

Presenting a report from the district public relations committee, Tom Stevenson, of Chesley, said that prior to competition from the gas companies, elected Hydro commissioners were inclined to rest in their chair of authority with a "take it or leave it attitude."

"It's different today," he said. "We still have something to sell and it is equally competitive. But the customer can do without it for some energy-consuming appliances."

Utilities may swap more information on sales policies if a resolution from the Georgian Bay meeting is approved by the

annual meeting of the OMEA in Toronto next spring.

The proposal called upon each branch of the Hydro family "to exemplify the art of communications by a complete exchange of all sales policies, techniques and disposal of surplus electrical equipment to the point where each will more clearly understand, appreciate and assist the other local branches so that the customers will be more fully served."

Mr. Stevenson said the resolution arose from an incident in his own community in which a customer had purchased a surplus electric water heater from Ontario Hydro in Walkerton. "I have no objection to Ontario Hydro selling heaters, but why come into another community without telling them?" he said. "I think there should be better communication between all members of the Hydro family when occasions like this arise."

Elmer Wright, of Mississauga Hydro, said he thought the resolution might lead to difficulty because it inferred that utilities should tell their neighbors about their every move. On the suggestion of Mayor Bob Bentley, of Barrie, the wording was amended to say that information should be exchanged "wherever practicable."

A second resolution calling upon Ontario Hydro to allow municipal systems to adjust their retail rates within certain limits white awaiting rate adjustment approval was defeated.

georgian bay feels the heat

Consumption of electric power in Ontario Hydro's Georgian Bay region rose 12.8 per cent last year compared with a provincial



Another Hydro veteran, DeWitt Miller, of Wingham, receives a long-service award at the District 2 meeting.



New District 3 executive includes, seated, Mayor A. J. Marshall, Fort Frances, 2nd vice-president; R. F. Stratton, Kenora, president; W. R. Sioux Lookout, 1st vice-president. Standing, E. J. Hawthorne, Dryder past president; E. A. Vigars, Port Arthur, secretary-treasurer, and E. G. Caccamo, Schreiber. Also elected were S. Ashton, Port Arthur, and W. H. Spicer, Fort William.

increase of 7.2 per cent, regional manager I. C. Ingimundson told District 2 OMEA delegates.

Reporting on the year's progress, Mr. Ingimundson said that 1,470 electrically-heated homes were connected up in 1967. These included both new houses and older residences converted to electric heat. Together, they would produce an annual revenue of about \$250,000.

More than 40 per cent of all new homes built last year were electrically heated. In addition, 24 all-electric schools were built and another 13 opened so far this year.

Mr. Ingimundson warned that the lack of a uniform marketing program among the municipal utilities was damaging the promotion of electric water heating. Guidelines had been laid down by the AMEU, but many utilities were reluctant to shift from their present programs.

ameu launches into lineman training

Progress of the AMEU's lineman training program was outlined by association president F. L. G. Askwith, who told delegates the AMEU had opposed the establishment of a provincial advisory committee to supervise training in that trade.

"We did not feel in our particular industry that this development was desirable," he said. "We felt it might lead to a division of authority without an appropriate division of responsibility. Money for the training would ultimately come from our utilities."

Mr. Askwith said that officials from the AMEU, OMEA and Ontario Hydro had argued the case with the Ontario Department of Labour. The decision was that the

utilities would undertake lineman training on their own responsibility and a provincial advisory committee was not required.

The first course was launched at the Ontario Hydro centre at Orangeville in mid-August. "I was most impressed with both the facilities and the way in which the course was undertaken," he added.

Mr. Askwith said the course was for first-year linemen who had been with a utility for at least six months. It was expected that second and third-year courses would be introduced together with a refresher course for senior men.

"The success of our training program rests on your participation," he emphasized. "Please make every endeavor to send your linemen when courses are next announced."

Earlier, the AMEU president had appealed to utility commissioners and managers for their continued co-operation in allowing employees to attend AMEU meetings. "The AMEU involves itself in all kinds of technical work and would not exist were it not for your goodwill in permitting staff to participate in this work."

Mr. Askwith pointed out that lineman training was only part of the AMEU's manpower training program. The association was due to hold a course for supervisors in October while training programs for marketing and office staff were under examination.



the new 'boy' plays host

They went about as far as they coule west that is – for this year's OMEA is 3 fall conference with Kenora playing to 100 delegates and their wives. It is the Indian summer outside, the ground to grips with several areas of Hydromanicipal year.

J. R. Philips, president of the M took an introspective look at the assolatiself, saying that the central exumeralize that these district annual ences are the true lifeblood of ovital and viable organization.

"Here it is that the individual menter each district has the opportunity of its voice heard in the overall run Hydro. Here we have democracy it



with OMEA president J. R. Philips, right, at the District 3 meeting G. Caccamo, J. D. Phillips and Reeve F. V. Harness, Schreiber.



Fort Frances delegates W. B. Wilde, Mayor A. J. Marshall and D. M. Taylor talk over the District 3 program with AMEU president F. L. G. Askwith, second from the right.

roots. This, basically, is our parliate. If anything is bugging your municipal mission, this is the time and the place pose it," he said.

Philips said it was also the place to own and take a good look at "ours," a normal thing in the life of any re person, organization or association. needs to take time for a little introtion. Where have we been? Where we now? Where are we going?"

compared Hydro in Ontario to a legged stool with Ontario Hydro, the U and the OMEA making up the legs.

ach of our organizations has a specific dessential function to perform and I it is important for the smooth running ydro in Ontario that each perform its rular function to the best of its ability,"

ening commissioners to a board of cors of a limited company, Mr. Philips to was their responsibility to set policy to commission, not to run the utility. It is up to the manager and his staff, the policy has been set. If you are to adequately perform your duties what be competent in your own right can't hobble along using your riger as a crutch."

ining to regional government, Mr. ils told delegates that as a result of final meeting resolution, a study of fects it would have on utility composers is being made. It is hoped that a sentation on this subject will be available the OMEA meeting in the new year. Day Two of the meeting, E. G. Volds, manager, Municipal Electrical illustrations Service, used a potun approach in bringing the group totate on labor relations developments.

He touched on conciliation procedure, grievance handling, recent settlements, benefits, and trends.

"This year has been one of the most challenging and difficult periods in labor relations in Canada," he said. "On one hand there is the union pressure for wage increases to meet the rising cost of living, and on the other hand government and major industries are trying to maintain price stability."

Mr. Reynolds said that while few utilities had been involved in strikes, many had gone to the conciliation officer and conciliation board stages of negotiation before reaching settlements. In 1965, 18 per cent of the AMEU utilities negotiating required a conciliation officer and 22 per cent of these went to the conciliation board stage. Similar figures for the first seven months of 1968 were 38 and 50 per cent.

One resolution was brought before the membership by Port Arthur PUC. It called for copies of the short annual report, which are being sent by some commissions to customers as part of the public relations program, to be sent to the OMEA for delivery to members. It was passed unanimously and without comment.

Before the business session closed, Atikokan was picked as the site of the 1969 conference.

utilities boost load

Demands for electric power by municipal utilities in Northwestern Ontario increased last winter by about 9.5 per cent, J. Walter Looney, Ontario Hydro regional manager, said at Kenora.

Reporting to delegates at the fall conference of District 3 OMEA, he said that the Northwestern increase was one per cent

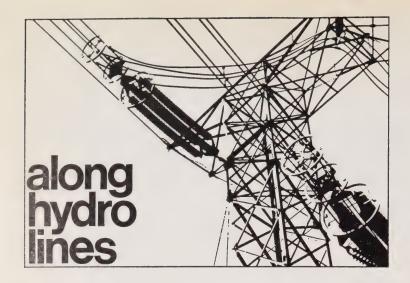
above the increase experienced by municipalities in the rest of the province. Both are greater than the long-term average growth figure.

"This must surely mean that our combined efforts toward increased sales of electricity are bearing fruit. In fact, good progress has been made this past year in the selling program both in your utilities and our areas," said Mr. Looney.

Although fewer homes had been built so far in 1968, the sale of electric heating continued near the same level as last year. The number of homes converted to electric heating exceeded the number of new electrically-heated homes.

"We are trying to improve our position in residential heating by offering land development loans for a bona fide subdivision. Two such projects are presently under consideration," the regional manager added.

Turning to the commercial and industrial market, Mr. Looney said that 1968 was the best year yet. Electric heating sales were greater than at a similar time last year and many inquiries and studies had been made. Referring to new commercial electric heating, he mentioned the initial buildings at Confederation College at the Lakehead and rooms in the new Holiday Inn, Kenora.



Summer peaking

Heavy use of air conditioners during summer's heatwaves pushed demands for electricity to new highs for utilities from St. Louis to Boston. And it turned Ontario Hydro into an exporter of power.

On four days in July and August, Hydro supplied a total of 630,000 kilowatts to four American companies. During the winter, when demands in Ontario reach their peak, the American companies usually supply Hydro with energy.

A spokesman for New York's Consolidated Edison said that in some cases air conditioners and refrigerator-freezers overtaxed distribution lines in areas where no such demand was predicted. The utility had no way of knowing when thousands of units would be switched on, so transformers occasionally burned out or shut off automatically to avert damage. Crews frequently worked 16-hour shifts to restore service.

Double the power

That familiar lament "the kitchen fuse has blown again, dear" will seldom be heard in homes built or completely rewired after January 1, 1969. That's the implementation date of a new Ontario electrical requirement for kitchens.

The new regulation calls for a three-wire circuit to the two electrical outlets of a "duplex receptacle," effectively doubling their carrying capacity to 3,000 watts. While the present regulations call for three duplex receptacles in the kitchen, each is supplied by a single 15-ampere circuit and can carry only 1,500 watts of load.

'A couple of today's high-watt appliances plugged into a duplex receptacle could easily blow the fuse," said Hal Wright, Ontario Hydro's assistant chief electrical inspector.

The change, which affects apartments and summer cottages as well, comes as the result of a recommendation of the Provincial Committee on the Ontario Electrical Code. This body is made up of representatives from municipal electrical utilities, fire and electrical inspection authorities, contractors, manufacturers and distributors.

DC in BC

For the first time in Canada – or anywhere in the Western hemisphere – a high-voltage direct current transmission system is now in service, delivering power for B.C. Hydro from the mainland to Vancouver Island.

The \$14 million project, which took three years to complete, was done under a contract by Canadian ASEA Electric, Ltd. The contract covered the design, supply and installation of two con-

verter stations. The mainland station, Arnott, is locate south of Vancouver.

A total of 78,000 kilowatts of DC power is supplied to \ and the rest of the island at 130 kilovolts over 20 miles of marine cable and 25 miles of overhead line.

Mercury-arc converters are used in the two stations to calternating current to direct current and then back ag September, 1969, a second converter unit is schedul operation, thereby increasing the voltage to 260 kilovol the transmission power to 312,000 kilowatts.

Nuclear neighbor

The Power Authority of the State of New York is to build million nuclear power plant on the south shore of Lake (near Oswego, New York. It is the authority's first entry in nuclear field.

The plant will be next to a 600,000-kilowatt nuclear built by the Niagara Mohawk Power Corporation and school to go into operation this year. Niagara Mohawk annou has cancelled plans to build a nuclear plant near Albany and has transferred contracts with General Electric for the and other equipment to the State Authority for the Oswego

The nuclear station will be built under an \$8 billion expansion bill passed last spring by the State legislature. opened the way for the authority to enter the nuclear figures was in opposition to legislation sought by Governor Rock who wanted to limit PASNY to the hydro-electric field. revised to its present form under pressure from the late \$1.00 Robert F. Kennedy.

A whopper

Sweden will soon be able to build power transformers for as big as anything in use in the world today.

The big Swedish-based electrical group ASEA has annua major expansion of its laboratories, factories and test reaccommodate the construction of the giants. The protransformers will have a power rating of 2,000,000 kva, valued to the same of the s

Today's most powerful transformers have an output 500,000 kva. Highest voltages in use in the world at Quebec Hydro's Manicouagan system, which operations of the state of the system of

Under she goes

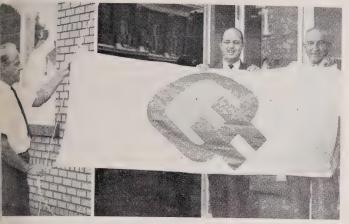
Windsor Utilities Commission now has some submerg tribution cable. Crews laid a 27,600-volt cable across a of the Detroit River to serve Peche Island, which is be



Hear those kilowatts gurgle

oped as an amusement centre. The heavy cable was placed in rench at the bottom of the river beside water and sewage elines while a diver kept a close watch on the operation. Bell ephone placed a line beside the power cable before a dredger vered over the services with river-bottom clay.

ying high



ering symbol

symbol for Hydro in Ontario is flying high in Meaford. About a months ago, Meaford PUC manager Roy Bishop suggested ntario Hydro that a flag be produced for the many municipal ies in the province. Hydro took up the challenge and designed flag, which carries the orange and vermilion symbol on a e field. Naturally enough, the first one was hoisted over the office. Displaying the flag just before it was run up the pole Mayor Don Ferguson, Mr. Bishop and Commissioner Jack ox. The local commissioners aren't neglecting the back of office building, either. It is being painted an orange buff and will carry suitable symbol identification.

perbulb

ttle of the bulbs is being waged south of the border. Within of each other, Westinghouse Electric and Duro-Test Cortion announced the production of a new light bulb that dast half again as long as standard incandescents and at time produce more light.

Cro-Test spokesmen, who say they have three months' supof 60 and 100-watt bulbs, claim they have cornered the supply of krypton gas — used in the lamps in place of arnCanadian Liquid Air, of Montreal, is supplying the krypton. damps, which retail at \$1.29, are guaranteed for 2,500-userulife. Krypton, incidentally, was the planet birthplace of the no-strip character Superman.

eching better electrically

elniversity of Waterloo is introducing a sort of do-it-yourself untion kit this fall.

Agries of taped lectures has been assembled for post-degree ups in physics for high school teachers seeking to up-grade leaching certificates. The idea is to avail teachers in remote apf the up-grading. The university has been running Saturday so for the teachers for a number of years.

believed that this is the first time such a system has been canada. Tuition fees are \$100 a course plus a \$25 arable deposit for the tapes, which run for 45 minutes. Priately enough, the courses include electricity, magnetism capacity.

November in February

The Ontario Electrical League Industrial Conference will be held at the Inn on the Park, Toronto, on February 10 and 11, 1969. Departure from the usual November dates was decided upon for several reasons.

A survey of contractors showed that they were busy cleaning up the year's work in November and many could not attend, whereas February is more suitable. The annual meeting, usually held in February, will now coincide with the conference and allow chapter members to attend. National Electrical Week is also held that month, allowing members to attend a banquet to commemorate Thomas Edison's February 11 birthday.

The format of the conference will be completely different, with the emphasis on workshop-type meetings. With concurrent sessions on several topics, delegates will be able to choose subjects of individual interest. Both the time and size of the exhibit area will be extended. Invitations will be sent to such persons as architects, builders and consulting engineers to view the displays.

She's a bouncer

London PUC has a new staff member. Although she's only a year old, she already tips the scales at 600 pounds and is close to four feet tall.

Babar, of course, is an elephant. She was raised in captivity in Portland, Ore., and has taken up duties in the PUC-administered Storybook Gardens. The pachyderm is a present from the Rotary Club of London and her only job is to keep the youngsters who visit the gardens happy.

School for linemen

Executive members of the AMEU and OMEA recently visited Ontario Hydro's new conference and development centre, near Orangeville, to see the inauguration of training courses for municipal utility linemen.

Introduced after about two years of preparatory work by members of the AMEU, particularly the Manpower Planning Committee, the courses ensure that men from utilities both large and small will receive the same high standard of training.

The first two sessions, each of one-week duration, were for beginners – men with less than a year's service. Other more advanced courses will be staged in future. George Breckenridge, centre manager, shows a group of visitors, including OMEA president J. R. Philips and AMEU president F. L. G. Askwith, a working scale model of a bank of transformers. It's used as a teaching tool and was built by one of the course instructors.



Maxi use for mini-power

Helping out

Ontario Hydro has again made available bursaries to universities in the province offering honors courses related to Hydro operations. Included in the designated courses are applied science, engineering, business administration, commerce, mathematics and physics.

The bursaries, worth \$500, were first offered in 1964 to standardize assistance to students. Previously, a number of scholarships had been provided on an individual university basis. Each bursary is now awarded to second-year students at the discretion of the student-aid committee at each university.

The 13 universities eligible for the awards are: Brock, Carleton, Laurentian, McMaster, Queen's, Trent, Guelph, Ottawa, Toronto, Waterloo, Western Ontario, Windsor and York.

Electronic eyes?

What would seem to be the ultimate in mini-circuits is the subject of study for Westinghouse Electric scientists in Los Angeles. They're working on a way of printing electronic circuits on flexible materials like foil and paper.

It could ultimately lead to circuits small enough to be implanted inside the head to replace visual nerves. It could, for example, help blind men to see. The system involves stenciling tiny transistors – about the size of two pinheads – on commonplace materials with vapors of metal and glass.

municipal briefs

Finding faults in Canada costs \$2,000 more than in the United States – at least that's what Toronto Hydro has discovered. Chairman John McMechan said they had to pay \$6,100 for a fault-tracing transmitter that sold in the U.S. for \$4,100. Customs duties and taxes took the extra bite – 22½ per cent duty, 12 per cent federal sales tax, five per cent provincial sales tax and eight per cent exchange rate on U.S. funds. The transmitter detects faults on underground lines.

Aurora Hydro has taken a step up. Installation of a \$100,000 distribution station on Edward Street has boosted the local system from 4,000 volts to 13,800. Manager Charles Copland says the new station has eliminated the need for several small but costly substations. Ontario Hydro crews started station construction in June and completed it in late August.

More information is what Sudbury Hydro wants before it decides whether or not stamped return envelopes will be sent with customers' bills. In two experiments, one with stamped envelopes and one with unstamped ones, results seemed to indicate the cost isn't justified. But vice-chairman W. E. Edwards has asked exactly how much the service costs and chairman E. C. Dash wants to know how many customers pay by cheque. The envelopes will be sent twice more to the same areas as in the previous survey.

Electric heating is a hot item in both Nepean Township and Burlington. The two utilities recently reached landmarks in the number of all-electric dwellings. Nepean Hydro marked its 1,000th unit while Burlington PUC reached the 700 mark.

Port Colborne recently placed a new 5,000 kva substation in operation on Barrick Road.

Oshawa PUC has taken second place in the national safety records – for transit operations. The utility, which also operates local buses, showed an improvement in its accident rate of 56.51 per cent over the previous year. The category of companies

serving population areas of less than 200,000 was wo Kingston Public Transit System.

Fergus PUC, after a 15-day strike, signed a new two-year tract last month with the International Brotherhood of Elect Workers.

A hard-cover, loose leaf handbook on public relations is developed by the OMEA's PR Committee. It is intended to as a reference manual. Sections will deal with such topics a press, elected officials and municipal contacts. When the stage is completed, a copy will be filed with each utility i province. Additional sections will be sent later.

Talk, talk, talk

One of the few utilities in the province that has a telephone so to look after — Port Arthur PUC — releases some interesting t in its annual report.

Judging from the report's statistics, the Hill City residen a gabby lot, maintaining the Canadian tradition of being the champion telephone talkers. The average number of calls daily over the municipal system has soared in the last d from 96,000 to 131,000. That's almost three conversation every person in the city, including infants not yet at the tastage.

In the same 10-year period, the number of phones has jul 62 per cent to nearly 24,000. Telephone property is now \$7.5 million.

Centennial report

Toronto Hydro has published its annual report covering. The 24-page report states that peak load for the year 823,786 kilowatts, up 9.63 per cent over 1966. Energy sol increased by 9.78 per cent, reflecting not only the general globut also amalgamation of Forest Hill and Swansea Hydrothe Toronto system.

Underground distribution took a \$3 million slice out of the capital expenditures of \$5,184,822. Major underground rotions were carried out on Bloor Street, Eglinton Avenue and the entire length of Shaftesbury Avenue. A new testation on Charles Street, to serve the Bloor-Yonge area, into operation with a capacity of 40,000 kva, one-quarter ultimate size.

Although it was a Centennial year report, commissioners reference to the devastating mid-January ice storm. The tribute to the loyalty and devotion of employees and the parameter and understanding of customers during the emergency.

July-August energy production

Primary energy provided by Ontario Hydro in Ju totalled 4.21 billion kilowatt-hours, an increase of 10 per cent over the same month a year ago. In August, the figure was 4.28 billion kilowatt-hours, an increase of 7.9 per cent over the same month last year.

For the first eight months of 1968, the total is 36.5 billion kilowatt-hours, up 8.5 per cent over the samperiod last year. Adjusted for seasonal influence primary energy demand in July was 4.66 billic kilowatt-hours, 3.9 per cent more than June. The demand for August was 4.64 billion kilowatt-hours. 4 per cent less than that of July.

Adjusted for seasonal influences, the August energy demand projected at annual rates would result in a output of 55.69 billion kilowatt-hours, which is 400.5 per cent of the energy demand in 1949.



If this column appears duller than usual ind boggling as the prospect may be) it's cause we've had to pull in our horns. Even bugh the opinions expressed here are strictly isonal, and seldom if ever coincide with those the Commission, we have been guilty of underimating the power of the printed word.

Only vaguely aware of the tremendous followthis column has built up over the years, and the sincerely ignorant of the influence our ords have come to exert on the statesmen and itical leaders of this country, we have been not blithely along as though our thoughts were ing as lightly upon important ears as the gentle that falleth upon the back of a duck. Now we we different.

ust last month we had some snide remarks to ke regarding the ING project – that \$150 milscientific shooting gallery designed to proour nuclear scientists with a target for their ruse proton beams. Today that proposal is as id as the proverbial dodo.

rue, government penny pinchers cloaked their lision in vague generalities having to do with pirities and the need to curtail expenditures. our readers won't be fooled for a moment. ustomed to finding the golden eggs of wledge laid regularly by our ostrich with the recreet stance, they know what killed ING ght, and it had nothing to do with economics. prry about that, boys. We didn't really have Thing against your Intense Neutron Generator 'ouldn't you settle for that do-it-yourself ued laser developed recently by IBM? It uses qd dyes, such as those found in clothes Feners and fluorescent lipsticks, to produce 0,000-watt bursts of light that last up to 2.5onths of a second. Granted, that's not Xitly forever but the danged thing can be contrited from available parts for less than \$50. e not, want not is our motto and that's a g of \$149,999,950.

mateur skits are sometimes hard to take utilelegates to the Georgian Bay Municipal eric Association's recent annual meeting all and to the last curtain-call. They had no

choice. Program directors took the precaution of placing the stage directly across the only available exit.

The performances in question took place after a long and succulent banquet and while the stage arrangements were effective, some felt they strained the capacity of the audience to the limit. Observers reported much squirming in the seats and an unusual propensity toward crossing and re-crossing of the legs.

Even so, the curtain came down to a tidal wave of applause and some delegates were moist about the eyes from pent-up emotion as they flooded out of the hall.

■ Flying saucers are now suspected as the real cause behind the, ahh, brief interruption in the flow of power which occurred over a fairly wide area of Ontario and the Northeastern States on November 9, 1965. An Arizona scientist said recently that a number of "extra-terrestrial vistors" were sighted on the night in question and he hinted that the power interruption might very well have been caused by space ships from another world.

We'll buy that, professor. Oh my yes, we'll buy that. But next time please get that old telescope into action the minute the lights start flickering. It could spare us all a lot of baseless accusations.

■ Speaking of power interruptions, there was a short one in Kalamazoo, Michigan, not long ago caused by an elephant. Chained to a power pole, the beast became irritated and shook the pole, whipping the wires together and causing a short.

And speaking of elephants, we've been keeping a close eye on any reported fluctuations in last year's birth rate. As we know, there were some sharp upswings in the human birth rate about nine months after the blackout which the behaviorists afterwards ascribed to dalliance in the dark. Any day now we should know what elephants do when the lights go out. Their gestation period is about two years and it's time to hear from the sociologists.

Elephants are also in the news in South Africa where more than 500 in Kruger National Park have been declared surplus and whose steaks have gone on sale in local butchers' shops along with those of the wildebeest, impala and buffalo. The problem is overstocking, they say, and the game must be killed off to preserve the balance of nature.

Surplus poachers, game wardens and rubber neckers are not being offered to the packing houses but it's hard to say whether this reflects government policy or is simply a sanitary precaution. In any event, newscaster Stanley Burke, a member of GASP (Group Action to Stop Pollution) told a consumers' group that the human being is now unfit for human consumption. We are inedible, he contends, because of our high DDT content. Anyone who has used a spray gun in his garden is suspect, he suggests, because this poison stays with us unto death, and a little beyond. The body neither expels nor absorbs the stuff – it just stays in the fat forever.

It's certainly food for thought. Cannibals with a penchant for lean meat will continue to enjoy their meals, but witch doctors will be warning against the fatter cuts. Deep-frying is definitely out.

All of which provides us with an excellent opportunity to unload a ghastly bit of corn which has been fermenting in our files for some time, and has been retained only because the boss thinks it's funny. It concerns a newspaper editor who has fallen afoul of some cannibals and is slowly coming to a boil in the proverbial iron pot. It goes like this:

Editor: Damned shame, this, and to think I was in line for a good promotion.

Cannibal chief: Don't worry – you soon be editor-in-chief.

Ah, well – read any good books lately? Not having perused the local telephone directory for some time, we started in on Page One the other day and got as far as Page 46 before coming across anything out-of-the-way. There, sandwiched between Anti-Friction Enterprises and Anti-Suicide was an organization called Anti-Hydro of Canada Sales, Ltd.

Shaken a bit, we called the outfit a couple of times but failed to clarify the nature of the goods or services dealt with. And so the speculation continues. Could it be an organization of gas company officials dedicated to the downfall of Hydro through the sale of anything not consuming electricity? Or is it an ad hoc group working in close co-operation with the Smith study on taxation?

Whatever the facts in this particular situation, the telephone book is to be commended for its consistency in providing some of the best-read literature in the country – year after year. It's concise and very much to the point yet manages to cover all the best spots in town and seems to have everybody's number. Strongly sex-oriented, it uses plenty of four-letter words and intermingles the sexes indiscriminately.

And, if you're still on the line, we might mention a photo we came across recently of a comely young wench decked out in a mini-dress designed to resemble a page of a telephone book. Turns out she was sponsored by a phone company to promote the yellow pages. Wonder if the telephone people still want us to let our fingers do the walking?



Follow the leader? What do you think? Hoisting a transmission tower off the ground may seem pretty humdrum in this day and age, but there is a catch. It's still carrying 115,000 volts. Hydro engineers scored a first when they decided to uprate the line to 230,000 volts without cutting off the power. The job involved moving a new steel base under the towers to raise them 10 feet. Operations like this have kept Ontario's electrical rates among the world's lowest. Electric power costs about the same today as it did a decade ago. How's that for a bargain?



· life on the shelf

- pooling powerinstant homes

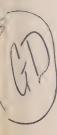
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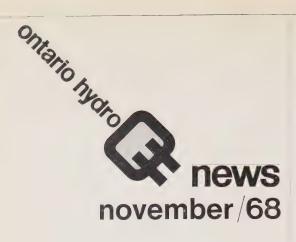
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the cover

Sports diver examines a sunken wreck off Parry Sound. The thousands of men and women who dive just for fun are being hailed by Canada's growing oceanology industry as its greatest asset. Some of the latest developments in this exciting new field are discussed in the following pages.

editorial board

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F. L. G. Askwith, President, AMEU
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under pressure

Pensioners and others on fixed incomes are among the biggest victims of inflation but, if impact levels are to be established, Hydro must also be accorded a top spot on the hit parade. Its vulnerability to the present sustained period of rising costs is above the average.

Take the matter of power production. Major sources of low-cost hydro-electric power have all been developed and coal-fired thermal stations will very shortly account for half of Hydro's generating capacity. This means more expensive power — a cost problem which is being intensified as demands grow.

While nuclear-electric plants are expected to produce cheaper power over the life of a station, capital costs are much higher than for coalburning plants. Projections indicate that nuclear generation involves an outlay of \$244 a kilowatt compared with \$133 a kilowatt for a fossil-fuel station. Nuclear thus represents a substantially higher investment of scarce capital.

And borrowing money is expensive. The interest rates Hydro pays on its bonds have climbed by 40 per cent in the last five years and by 60 per cent in the last 10 years. In 1967 alone, Ontario Hydro's interest costs amounted to almost \$84 million. This works out to something like \$230,000 a day, 365 days a year.

While most businesses enjoy some flexibility in scheduling their expansion programs to take advantage of fluctuation in interest rates the electrical utilities enjoy very little. They are usually required to go all out in capital construction just to stay even with soaring demands.

Last year, Ontario Hydro's capital expenditures totalled \$252 millior and they are expected to exceed \$300 million this year and reach \$350 million in 1969 — all records.

But if the cost of borrowing money is a major inflationary factor in a capital-heavy operation like Hydro, there are many others. Materia and equipment prices continue to rise. In five years, the cost of building one mile of distribution line has increased by 15 per cent, and the cost of operating and maintaining it by almost 20 per cent

Wages and salaries have risen 25 to 30 per cent in the same period.

Property is another area of growing costs and the steep rise in land values has been reflected in the cost of acquiring property for system expansion. Grants paid to municipalities in lieu of taxes have also gone up — by 81 per cent in the last five years and nearly 300 per cen in the last 10 years. This is partly due to expanding power facilities but much of it is the direct result of higher municipal mill rates and assessments.

To help offset these inexorable inflationary pressures, Hydro is using everything in the efficiency expert's bag of tricks including automation, improved techniques, tight budget controls, research, extensive staff training, consolidation of work areas and marketing procedures designed to minimize unit costs.

And despite recent increases in the rates it charges for power, Hydronas been remarkably successful. The average residential customer of a municipal utility in the province pays \$79.90 a year for his electricity. That works out to 22 cents a day — less than half the price of a package of cigarettes.

Inflation is everybody's enemy and one Hydro is fighting with particular vigor in order to retain the kilowatt-hour as the biggest bargain available today.

anada's new frontier

y and photos by Ted Johnston



Mike Wright, president of Hydrospace Developments, adjusts prototype diving suit designed to keep out extreme cold. Below: oceanologist Ben Ackerman outlines his proposal for living and working below the ice in the Canadian Arctic.

with underwater pipelines, or possibly huge nuclear-powered submarines, transporting natural resources from the Canadian Arctic archipelago to the markets of the world.

Ideas like this are being voiced with increasing frequency as advances in diving technology permit man to return to his original habitat — the sea. Oceanology, in fact, is already being hailed the glamor industry of the seventies.

'The Canadian Arctic constitutes about 40 per cent of the whole of Canada, and much of it is under water," says Mr. Ackerman. "The efficient exploration of this area is of great importance, not only because of potential resources but also to prove our right of ownership."

Generally speaking, most interested parties agree that in some way we should be involved in the exploration and development of Canada's extensive continental shelf. Opinions differ only as to the approach. One group advocates a government program, a Canadian "man in the sea" project. Another maintains it is a waste to re-do what others are doing, particularly on a limited budget. They believe Canada's best contribution can be in the area of specialized equipment or research, things that nations "up to their

necks" in the sea don't have time to do. Then, of course, there are the opinions of the manufacturers of oceanological equipment and the government agencies now responsible for underwater research.

Dr. Joseph MacInnis, a Canadian and medical director for Ocean Systems Inc., of New York, is a strong supporter of a national program.

"I cannot begin to tell you what the scientific, economic and military implications will be if we continue to ignore our

offshore territories; we can be certain that other countries will not ignore the The cost of a national ocean program would not be prohibitive. While we cafford a space program, we cannot af not to have an ocean program."

The opponents of any extensive government program maintain we can afford wait. We can afford to let others dowork and later draw upon their expert They point out that the equipment will make it all possible — Jacques Coustaqualung — was a refinement of an ic that had its beginning in 1825.

Industry backs the government-spons program. As a representative of one pany says: "We need our own mark to test our hardware. It's pretty diffic to get 'Made in Canada' labels into a American or French undersea project

The Canadian government provides r for research and development of oceogy products. In addition, there is a cushipbuilding subsidy of 25 per cent of selling price for Canadian-built offshimining rigs.

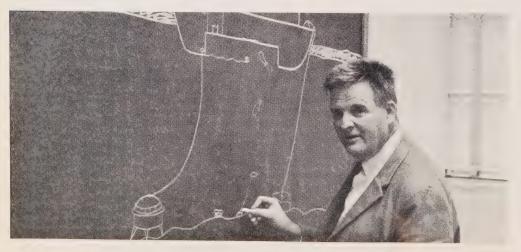
Martin Colpitts, of the Department of Industry's Marine and Rail Branch, so "We encourage manufacturers to get but tell them to look internationally a private industry, which offers larger tial than government contracts. There many oil companies needing oceano equipment, but only a few government.

Mr. Colpitts believes that, unlike spaexploration, the undersea program w receive its support from commercial prise because an opportunity exists 1 good return on mining investments.

The world state of underwater tech is well documented. There are under habitats, submersible decompression chambers, small submarines with de capabilities of thousands of feet, sor which can "lock" divers in and out a depths of hundreds of feet. Man has at moderate depths for a month at a and soon will do the same at 450 feet. Working dives by scuba divers to 60 feare already a reality.

Certainly, man must live in the sea to its harvest. Though it is potentially a plenty, the sea's resources are not in exhaustible. They must be nurtured harvested, not blindly ravaged and conservation is as important to sea as on land.

To practise aquaculture, man must be present to care for his charges and properties to the must live in the sea. As demonstrationally the number of the search of the sear





alless of the sophistication of the

e sea is a hostile environment. In n to the obvious problem of not Table to breathe under water, man hers. Basically, he has evolved to live Itted to only one atmosphere of re (14.7 pounds per square inch). ar'es in atmospheric pressure are the 'atural ones his body must accomdia; at the most about one pound per al inch over a period of 18 to 24 hours.

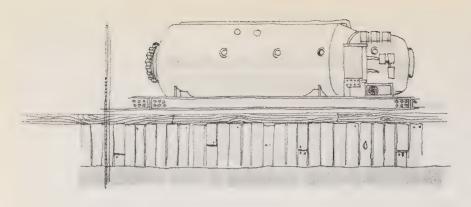
So, normally, his body doesn't have to cope with any great or rapid changes in pressure.

In sea water, he is in trouble because with every 33 feet of descent the pressure increases 14.7 pounds. Thus, a diver at 99 feet is subjected to four atmospheres or nearly 60 pounds per square inch. Because water is virtually incompressible, this increase continues the deeper he goes.

Even so, the mechanical effects of pressure the squeezing – are not man's biggest problem in diving. With the exception of a few troublesome air spaces, his body readily adapts to pressure. He doesn't need

an armored suit for protection. (Hannes Keller, a Swiss mathematician, dove to 1,000 feet in 1962 using specially adapted scuba gear.)

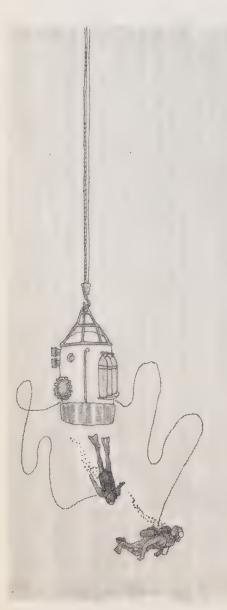
It is the reaction of man's body processes to increased gas pressures that causes the most trouble; the physiological effects. For example, if a diver breathed ordinary compressed air at depths in excess of 280 feet, its oxygen content would cause convulsions and probably death. For deep



Saturation diving is man's key to the sea. Using this technique, he can remain at the bottom for days, weeks or even months paying only lip service to his old master – decompression.

The submersible decompression chamber (SDC) and deck, or surface, decompression chamber (DDC) are vital to the technique. They enable divers to remain at bottom pressure for the whole working period and decompress only once.

If they live on the bottom, as in Cousteau's Conshelf project or the US Navy's Sea Lab operation, they ride the SDC just twice — going down and again on their return to the surface. The DDC is used for decompression only. Alternatively, they may live in the DDC, as illustrated here, using the SDC every shift much like an underwater elevator. On the bottom, the SDC provides dry sanctuary. It then transports the divers to their pressurized home on the surface. During transfer, the two chambers are locked together.



dives, special breathing mixtures with low oxygen content are used to avoid this problem.

Nitrogen, which constitutes 79 per cent of air, has no physiological effect on the body at sea level but causes all kinds of trouble as pressure increases. Beginning around 100 feet it has an anesthetic effect called "nitrogen narcosis," which impairs the senses like too much alcohol. Jacques Cousteau tells of a diver suffering from "raptures of the deep" (as the French poetically call it) offering his aqualung mouthpiece to a passing fish.

Helium has no narcotic effect and is used almost exclusively in deep diving to replace nitrogen in the breathing mixture. But helium, too, causes problems. It turns good bass male voices into unintelligible Donald Duck squeaks, making communication difficult. Its thermal conductivity is almost six times that of nitrogen and it therefore accelerates the loss of body heat and makes a diver shiver, even at temperatures of 80 degrees.

It's also nitrogen (or helium in the case of deep diving), which causes the ''bends''. These inert gases are absorbed by the body

in increased amounts as the pressure rises. This in itself causes no difficulty unless the diver returns to the surface quickly. Then, normal body processes cannot dispel the gas quickly enough forms bubbles in the bloodstream. Th lodge in joints or block blood vessels cause the dread illness.

Thus, after a deep dive of any duratic a diver must come to the surface slow to avoid this problem. Decompression it is called, can take many hours and it usually out of all proportion to the timespent on the bottom.

For example, a 90-minute job at 140 feet can easily take a full day because necessity to decompress. Thus deep diving has been uneconomical.

But there is an answer. It's called saturation diving.

Conveniently, after some 36 hours a given depth, the body absorbs no minert gas. At this point, decompression time remains the same regardless of time spent at depth — be it 48 hours 48 days.

By providing a comfortable underwal habitat where he can return for food, warmth and sleep without the necest going through decompression each the diver can be left on the bottom of the job is completed. This technique extensively in industry, dispenses with need for repeated periods of lengthy decompression.

A number of Canadian companies and producing important aids to oceano producing import

Toronto's Spar Aerospace Products a decompression computer develope by the Defence Research Establishm in Toronto and now being evaluated the British and U.S. navies. It's a god example of the special applications approach. There was a need for this ment, which actually predicts the arrof inert gas absorbed by a diver and gives a visual indication of the progradecompression, allowing it to proce maximum rate.

And Hydrospace Developments, of mond Hill, have a self-contained insignation water diving. At 450 to 600 feet, tod's diver will become completely chilled 10 to 15 minutes; this new equipment extends the time to six hours.

Cold water isn't found only in polar rio Ocean waters are not static. They n

mix in all directions and not only on surface. The cold waters of the tic move down and actually underlie warm tropical seas of the equatorial ons. So any nation engaged in underprojects will eventually have a problem the cold in deep diving.

ny people in the field believe that water diving is the area where Canada uld concentrate its efforts. At least, we ild have plenty of places to practise.

Ackerman, in his proposals, says oth capability is not the major concern. Arctic archipelago is relatively shallow; oing the diver warm will be the olem to lick."

ording to Mr. Ackerman, there's another ip in Canada which has a substantial ct on our oceaneering program. This ne thousands of sports divers - men women - who dive just for fun. ey are the greatest asset to the industry have in Canada," he claims.

contributions are two-fold. Firstly, make people aware of diving. By ging the subject to the public attention, s divers provide real assistance ople like Ackerman, MacInnis and in the field when it comes to selling ideas and getting financial backing. ts divers also form a nucleus of underding individuals, which alone conmes quite a bit.

active role of the sports divers is ips not so clear-cut. Unless they are and to do something else, they aren't nuch use. All the various disciplines end for above-water development are needed underwater: engineers, lgists, geologists, doctors and so on.

Wright, president of Hydrospace, "I ask young enthusiasts who come inquiring how they can get into is full-time what they would do if bouldn't be divers. When I get inswer, I tell them to go and learn that also, then to come back and

right knows what he is talking about. @ going back to MIT he worked as a or Ontario Hydro on the White Dog stroject and spent close to 100 hours cold, murky depths of the Winnipeg eworking on cofferdam construction.

Adicts that within 10 years we will be igng sections of huge structures into cean where they will be assembled on the bottom in much the same way as a space station will be assembled in orbit.

Man is outgrowing his planet and must soon find new sources of food, minerals and fuel. He'll not get them from space at least not for generations to come. The sea, on the other hand, covers almost 70 per cent of the earth's surface, and is here.

It is a vast storehouse of protein capable of feeding the world's exploding population and is the final repository for "everything" because the land masses are being continually worn down and washed into it.

The continental shelves, the undersea extensions of the continents with a maximum depth of 650 feet, are the most accessible and likely ocean locations for minerals and fossil fuels to supplement the world's fast dwindling supplies. They are, as well, an area abounding with marine life.

With 1.5 million square miles of continental shelf, Canada has a vital interest in this last new frontier.

hydro keeps tabs on research

As the name implies, water is an important commodity at Ontario Hydro. Not only does water drive the turbines in hydroelectric stations, but coal-fired and nuclear power stations use millions of gallons an hour for cooling purposes.

With so much water around, it's only natural that Hydro needs divers, and there are about 20 such men employed in both operations and construction work. They clear, inspect and repair subsurface structures, help with cofferdam construction and perform all the other underwater tasks involved in the building and maintenance of power stations.

Special operations in connection with engineering or research projects are also undertaken. These include items like studies on underwater weed control and the formation of river bottom ice (see Hydro News, March 1968). Diving is not a full-time occupation and these men also work at other trades.

The nature of the work seldom necessitates deep diving, so Ontario Hydro divers



Hydro diver performs underwater work at hydro-electric power station.

normally do not work below 40 feet (in fact, the rules forbid them to do so). Independent industrial divers are usually employed for greater depths.

Because Hydro divers work in relatively shallow water, decompression is not a major consideration. A diver can spend unlimited time at 30 feet without decompressing at all, and even at 50 feet decompression times are not excessive. The main limitations are fatigue and cold.

Not that all the new techniques of saturation diving and the exotic hardware now under development won't have some bearing on future Hydro operations. Far from it. The engineers who build and maintain Ontario's huge power stations are constantly on the lookout for more efficient ways of doing their job.

Only recently, a diver was called in to inspect the dam of a hydro-electric station. Because he was working at a depth of 160 feet, his time at the bottom was limited to only two or three minutes. And engineers have been wondering for some time how they will eventually inspect the twin tunnels which supply water from above Niagara Falls to the Sir Adam Beck plants at Queenston. The tunnels plunge 300 feet below the city of Niagara Falls.

It could be that the new science of oceanology will provide economical answers to these and other problems. As a Hydro engineer says: "If it looks feasible, we're willing to give anything a try."



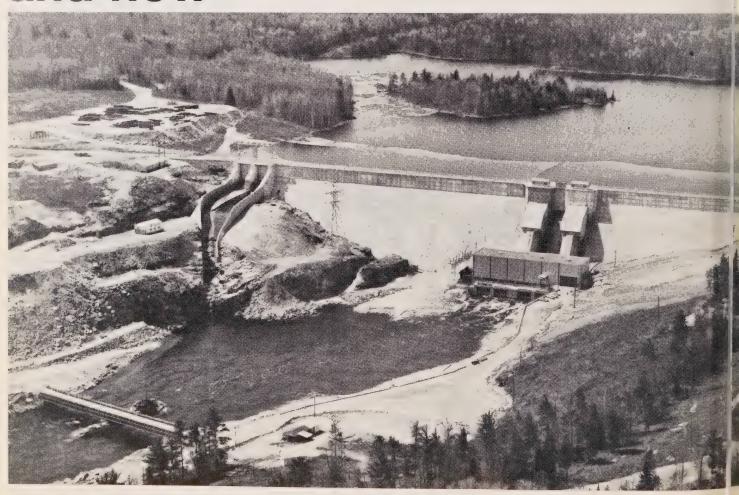
then....

button-pushing marks new era at mountain chute

A bronze plaque at the site of Mountai Chute — the province's newest hydro-electric station — says it is dedicated to "the men whose hands and skills built hydro-electric stations on the Madaw River: Calabogie, Barrett Chute, Stew ville and Mountain Chute."

For Mountain Chute is the most importink in a chain of generating stations sout along the "Mad Waters", a literal translation of the river's Indian name. When the final link is forged next year, is

and now



plants will be capable of feeding ,000 kilowatts into Ontario's power

plaque was unveiled at last month's cial opening of Mountain Chute by ario's Prime Minister John P. Robarts, compared Hydro's planning with of the auto industry.

st as the auto manufacturers are ady hard at work on the 1973 and 1974 dels, Hydro is working and planning into the future. Its attention is focused he requirements of the people of ario five years, 10 years and even her ahead," he said.

added: "We have an energetic, mic economy which is expanding at creasingly rapid rate. And between and 1980 our population will increase its present 7.3 million to more than

Robarts said that while other hydroric stations were being developed, was increasing reliance on giant shal-electric stations fuelled by coal or sium. "In fact, in less than two years now, thermal-electric capacity for the sime will exceed Hydro's resources water power."

Robarts and Hydro Chairman

Ge Gathercole pushed a button to

molically bring the station on line.

Units were started up last winter to

Hydro meet peak demands.

een a long flirtation between man and 30-mile river which winds and tumscross Eastern Ontario from Algonquin to the Ottawa River at Arnprior. It down a century ago with the thunder at white pine logs plummeting down symills. The river's might was hars to produce electric power at the for the century.

then that the Black Donald mine, in boasted North America's richest







flake graphite deposits, went into production using a fraction of the Madawaska's surge to turn a 400-horsepower generator. Electrical energy production took a more serious turn in 1917 when a private firm built the 4,000-kilowatt Calabogie plant. Ontario Hydro acquired the station in 1929.

More of the river was harnessed at Barrett Chute in 1942. Stewartville followed in 1948. The latest assault on the Madawaska began in 1964 and consists of three stages – the building of the \$30,800,000 Mountain Chute plant and the beefing up of Barrett Chute and Stewartville.

Sophisticated engineering techniques came into play during the building of Mountain Chute's 175-foot high main dam. Giant twin cranes ran along a 110-foot high bridge parallel to the dam, pouring 280,000 cubic yards of concrete from 11-ton buckets. The cranes — although they've gone west — are still in the power business. Right now they're doing their stuff at Kettle Rapids in Northern Manitoba, where a million-kilowatt hydro-electric station is being built.

The headpond created by Mountain Chute's dam backed up the waters 21 miles to the village of Griffith, creating Ontario's second largest man-made lake. Part of it has since been named Centennial Lake. And once the construction dust has settled, silence will again blanket the Madawaska valley. For all three stations will be remotely controlled from Hydro's Chenaux generating station, 30 miles away on the Ottawa River.

Mountain Chute at the start and end of construction. Speaking at the official opening were Ontario's Prime Minister John Robarts, Energy Minister J. R. Simonett, and Ontario Hydro Chairman George Gathercole.

artificial breezes and synthetic sunlight make this experimental farm a year-round operation

the great indoors

by Hal O'Neil

A gentle breeze wafts through the corn, animating the shadows that criss-cross bare soil in the strong light. Apart from the faint stirring of leaves, the silence is complete. Not the cry of a bird, the squeak of a fieldmouse or the plaintive moan of a distant train.

Then, footsteps. A door opens and in walks a lecturer with a group of freshfaced students. "This is another of our growth rooms," he's saying. "Again, we're using a mixture of fluorescent and incandescent lighting to get the optimum light quality for plant growth."

The room is one of several windowless areas in the new \$4,750,000 crop science building at the University of Guelph. Strictly in the interests of research, they're growing everything here from spinach to weeds. But the provision of a synthetic environment for the economic production of certain crops and vegetables appears to be nearing a breakthrough.

Two Canadians, for instance, have sold the idea of a "food factory" to business interests. Dan Scallen, an electronics specialist, first got the idea from growing plants under light in the basement of his Georgetown home. He later teamed up with John Kerr, a management consultant, to bring it from theory to reality. A \$250,000 pilot plant should be in operation by the end of the year.

Primarily interested in market garden produce, the partners are planning a fully automated operation with the seed planted on conveyors where they are fed with special nutrients, illuminated with highintensity lamps, sprayed with insecticide and wafted with carbon dioxide

"The key to keeping the cost down," says Mr. Scallen, "is pulsating light rather than a constant period of illumination."

He claims that leaf lettuce has been produced in 15 days and tomatoes and cucumbers in 30 days. This would mean either 24 or 12 yields a year compared to the one or two that can be harvested in Canada's climate.

Work carried out by the Research Division of the US Department of Agriculture bears out the claim. Working in enriched carbon dioxide and special light chambers, scientists at Beltsville, Maryland, produced market-size lettuce in 15 days. Cucumber and tomato plants were at the flowering stage within the same period.

The Georgetown inventor says that under his system both the growth time is shortened and the planting density increased. Normally, there's one plant to every two square feet. The indoor method allows eight plants in the same area.

It has been found that plants need much red and blue light, and almost no yellow and green. Red light alone causes plants to grow dramatically fast but spindly. Blue light makes them lush, but short and stocky. Mr. Scallen's system combines the two kinds of light.

The idea isn't new. Nuclear submarines of the United States navy, which spend as many as 80 days under water, have been using the growth room technique for a number of years. Apart from providing the crew with fresh green vegetables, it's a psychological booster to eat crisp lettuce 100 fathoms down.

And way back in 1923, Ontario Hydro research workers conducted an experiment in which they grew two geranium plants - one in a south-facing window, the other in the lamp testing room. At the end of the test period, the one grown under artificial light was three times the size of its rival.

Because of its flexibility, electric power is ideal for environmental plant control. At Guelph, light panels in the growth rooms

provide an intensity of 2,000 foot cand on each bench where the plants are loc By comparison, a well-lighted office w register 70 to 80 foot candles at desk le At the other extreme, full summer sunlic may reach 14,000 foot candles.

Both lights and growth benches can be raised and lowered. This ensures an ic distance between plants and the light source, regardless of plant size or type crop. Uniform temperatures are maintain by drawing large volumes of outside ai up from floor ducts, through the openmesh growth benches, past the lights out through ceiling ducts. The air is changed six times each hour.

The introduction of outside air provide a simple means of supplying the carbo dioxide so necessary to plant growth. Also, the movement of air (about one ra an hour) through the foliage imitates wind, which scientists have found has bonus effect on growing plants. It move the leaves around and allows direct lig. fall on all parts of the plant so that mor surface area can absorb its energy.

Ballasts associated with the light bank give off excessive heat and are therefo located above the growth rooms along with other electrical equipment.

Sophisticated control groupings, whic keep temperature, humidity and period photosynthesis at a set level, are locat the corridor near the growth room doo Vital data on these conditions is auton ically recorded.

One portion of the building – used for herbicide research - is isolated by air li This prevents contamination of the air

Dr. Neal Stoskopf, a member of the fall who worked hand-in-hand with the architect and contractor, is proud to st visitors around the new building. But le quick to point out that it is only a resent facility – it doesn't duplicate natural conditions.

"Indoor areas are small in comparison | because farm crops are grown in the f the bulk of our research will be in the







ntor Dan Scallen checks cedars that were a three-month indoor light treatment now dwarf nature's efforts. e University of Guelph with its brightly-lit oth rooms, Dr. Neal Stoskopf looks at a ed specimen in a small growth cabinet and duate student examines enzyme action.

"he says. "However, for the scienthe outdoor variation in the environit from day to day, month to month, to year means that tests must be ducted over many years before any clusions can be reached."

ristoskopf points out that the field tratory can be used only during a t growing season while indoor growth are a year-round proposition. vst research needs in crop science are Int and require immediate action. In an when scientific knowledge doubles /five to seven years, controlled 14th facilities become a necessary part research unit."

the time, the department grew test in the West Indies during the winter o'hs in an effort to beat the clock. Now erowth rooms are saving this expense.

s I a far cry from the days Hydro Seers reared a potted geranium under lap.



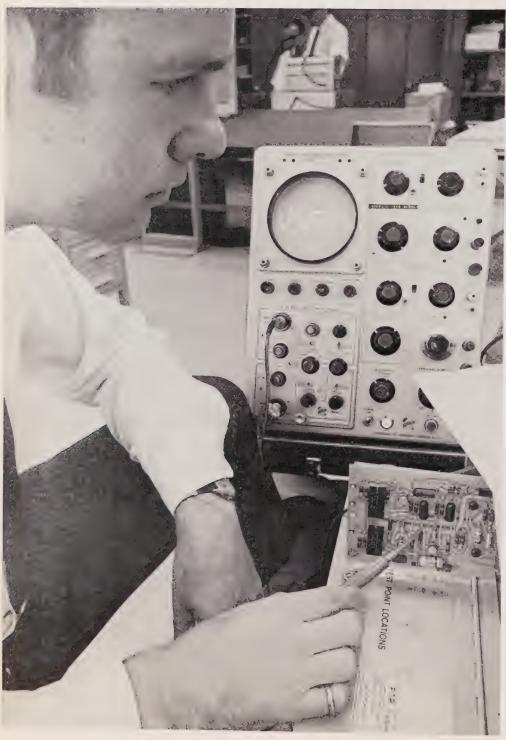


master control centres and top-level togetherness are helping to meet problems before they occur

power pools

the way to ease the load

by Bob Morrow



An alarm tolls insistently. A teletype chatters. A man in shirt sleeves watch-jagged red lines zig-zag across a pow flow chart. Another speaks quietly int phone and watches a frequency mon flash four-digit numbers on a screen – 59.99, 59.98, 59.98, 59.97...

Ten times a second, the numbers sho Ontario Hydro's operating frequency the synchronized electrical pulses of interconnected systems. Normal frequis 60.00 cycles a second. The split-sec decline causes an alert at Richview Contre, Hydro's nerve centre on Metriconto's outskirts.

Behind all the activity was a teletype report from Syracuse saying that a m. U.S. transmission line had tripped out Simultaneous reports had alerted othe system control centres in the Northez United States linked by phone, telety and power-monitoring instruments.

It turned out to be a routine alert. The frequency was soon restored to a he 60 as widely separated stations mate demands for power. For interconnected utilities are geared as never before to prevent widespread interruptions in the Northeast network.

Over three years have passed since the incredible blackout of November 9, 1, which left 30 million people without power visual interruptions paled by compart with the first major disturbance since. Hydro became interconnected with responding systems in 1953. If Niagara Fishad ceased to flow, power system engagers could not have been more surple

Since then, significant progress has the made regionally and by individual syntomaintain uninterrupted service. And other projects under way or on the drawboards will further minimize the chan of another major blackout.

Each utility has taken steps to beef u

Scientist checks out sophisticated relay on oscilloscope, left, and examines digital frequency monitor, below. Both instruments were developed by Hydro to improve system security.

own system but, collectively, here the key moves:

op-level co-ordination of internected systems by a regional reliability noil.

ormation of power pools between ups of closely-related utilities.

onstruction of strategically located ter control centres linked by sophistid communications systems to monitor ver flows and take quick preventive or ective action.

be measures are designed to avert ble on individual systems and prevent scading" trip-offs through the interpected systems similar to 1965. But, ower is interrupted, other measures are gned to restore islands of power and nable operators to rebuild the interpected network quickly.

Northeast Power Co-ordinating choil, formed in January, 1966, and comprising Ontario Hydro and 19 her systems in the U.S., has set the earn for a dozen similar regional set-ups is the border. Its stated purpose is "to note maximum reliability and efficiency ectric service in the interconnected ems."

key Hydro personnel, including Chief neer Harold Smith who sits on the dutive committee, are represented on council's three standing committees and wask forces. These men are specialists stem planning, operations, protection about on-line computers, power and forecasts and public relations.

Meatures distinguish the NPCC from eather informal CANUSE (Canadian-Seastern) group to which the utilities is easiern). The council has direct participaten by senior management of all aconnected utilities and has extended ordination to system planning and obting procedures.

It n the council, two new power pools been set up to plan, develop and





operate groups of systems for their mutual benefit. The New York Power Pool embraces eight systems, including the Power Authority of the State of New York, Niagara Mohawk and Consolidated Edison. Nine other utility systems form the New England Power Pool. Ontario Hydro, which has nearly 25 per cent of the total Northeast capacity, forms a third power pool. All systems coordinate their activities through the Northeast Council.

Both U.S. pools will have master control centres. Near Albany, N.Y., sod was recently turned for a centre to serve the New York Power Pool. The New England centre will be located at West Springfield, Mass. These centres will supplement individual system control centres, which prove unwieldy when the chips are down.

Hydro's centre will be linked to both U.S. nerve centres. These in turn will be connected with a similar centre in Philadelphia serving systems in Pennsylvania, Maryland and New Jersey.

For operational purposes, the NPCC has set up a Task Force on Interpool Coordination composed of the managers of the New York and New England power pools and Hydro's system supervising engineer, Jim Harris. Control equipment will be phased in gradually between now and next June when the three-in-one pool is expected to be fully operational.

Under the new set-up, no power pool will be an island. In the era of larger, more efficient generators and transmission systems capable of shuttling large blocks of power over long distances, the economic facts of life call for even greater interdependence.

In a wider context, the Northeast Council is one of 12 similar groups now operating in the U.S. which recently banded together to form a U.S. National Electric Reliability Council. Membership includes 174 electrical utilities in the U.S. and part of Canada with a capacity of 268 million kilowatts to serve 61 million customers.

This trend underlines the well-established advantages of inter-system ties to improve security and economy of operation. Some U.S. utilities with heavy air-conditioning loads experience peak demands in summer heat waves. Since Hydro's peak occurs in winter, an exchange of kilowatts often helps both partners to avoid power cuts.

But now efforts have been intensified to seek the maximum benefits of coordinated planning and operation through regional organizations like the NPCC. Thus all member utilities may coordinate well in advance the addition of new facilities, such as extra-high-voltage lines and major generating stations, and take necessary measures to ensure network stability, economy and reliability. In the U.S., for example, such foresight has enabled small systems with limited funds to share in a large coal-fired plant or a nuclear power project.

Two tough questions face all interconnected members: What price security? And what degree of risk can a conscientious utility accept?

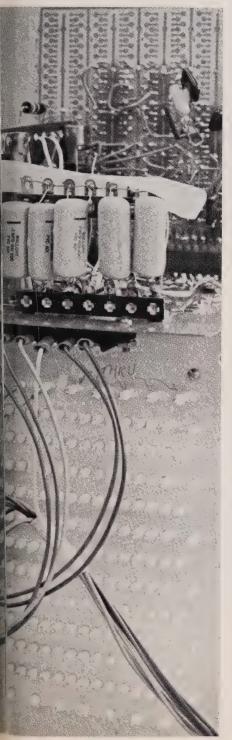
Hydro approached these problems by extensive computer studies coupled with the judgment of system planners and power supervisors with many years of experience. As a result, about \$29 million has been spent on reliability measures to guard against reasonable risks.

But what about the totally unforeseen? What if a jet aircraft crashes into several transmission lines or a control centre, for instance? A utility could protect its customers against such a remote possibility by building duplicate facilities, but costs would be prohibitive. The degree of probability for a number of contingencies must be continually weighed by each utility in concert with its interconnected power partners.

In short, the possibility of another major blackout from unforeseen causes or natural



Dark objects shown beside Lakeview Generating Station's tall stacks are emergency start-up units. Other security measures include solid state components for a computer-linked network analyzer to help operators pinpoint trouble spots.



disasters will always be there, but the risks have been greatly minimized. And if a major blackout occurred, chances are power would be restored much more quickly by working as a team.

strengthening the chain

Eliminate weak links and strengthen the chain. Working on this theory, Ontario Hydro and interconnected U.S. utilities have chalked up a long list of measures to avert another major blackout.

Hydro alone has spent or committed an estimated \$29 million to improve security of service.

New Hydro hardware includes a sophisticated frequency trend relay developed by its research division. About 80 of these solid state devices are being installed to protect expensive equipment against damage, confine blackout areas and permit speedy restoration of power. Another innovation developed by Hydro researchers is a digital frequency monitor to provide early warning of impending network trouble.

An operations task force is working out detailed requirements for a computer which will be devoted to monitoring system security from the Richview Control Centre. A remote system annunciator is also being designed - by glancing at a large display panel, the system supervisor will see the open-close positions of all circuit breakers on the high-voltage network.

In the meantime, two remote access terminals - one at Richview and a second at Ontario Hydro's Head Office will make possible quick or long-range system stability studies on a UNIVAC 1108 computer. The equipment can deliver a printed 75-page analysis to power supervisors in 30 minutes.

Hydro has installed other new relays, modified existing ones and altered settings. Improved recording, monitoring and datalogging instruments can detect split-second occurrences. Combustion turbine generators now provide emergency start-up power at major thermal-electric stations.

Next year, a new microwave system will go into operation in Ontario to improve communications, data monitoring and protection and control.

Interconnected U.S. utilities have installed or have plans for:

- * New radio and telephone links between utilities. These links are being equipped with emergency power supplies.
- * Stand-by power units to permit the safe shutdown and start-up of generators.
- * Devices to quickly sectionalize the highvoltage underground cables serving New York City. Underground cable tends to act as a capacitor and must be brought up to full load in small sections.
- * Relays to detect abnormal current flow and trip circuit breakers.
- * On-line computers to monitor power networks and work out corrective measures.
- * A new pumped storage hydro-electric plant in upstate New York to provide peaking and start-up power.
- * EHV lines with higher power-carrying capacity.

Other U.S. measures include revised operating procedures, greater emphasis on operator training and a system of quick power cuts to protect systems and confine blackouts to small areas.

wash day, every day, five days a week



photos by Keith Dugdale



It's enough to make any self-respecting galloping white knight dismount his surrender his lance and apply for uner ployment insurance.

All is brighter than bright within the \$4,000,000 complex . . . the fast-acti concentrated, dirt-gobbling, new forr cleaner-than-clean world's largest ir tional laundry.

Toronto's Booth Avenue Hospital Lal Inc. centralizes the laundry services for nine major city hospitals with a total (more than 4,000 beds. Sponsored by Ontario Hospital Services Commission represents another phase of a cost r tion program by the hospitals, aimed



ming duplication of medical and illary services.

ile most of the processing is flat work, laundry is equipped to handle such as as mitts for new-born babies, diapers, nters' coveralls, dust control articles, pes and rugs, and dry cleaning. Heavy, trically-powered machines have ninated back-breaking work, but there till a role for the traditional hand iron.

r sorting on arrival, laundry is carried lings by an overhead conveyor system. through the paces in washing machines p to 800 lbs. capacity, each load is ed in an extractor and subjected to a sure of 400 lbs. per square inch to ove water. While electricity plays a br role, both gas and steam are used in drying and pressing operations.

wing drying, sheets are whisked tugh huge iron-fold machines capable andling 1,500 sheets hourly. Smaller versions of the same machine iron fold towels, pillowcases and similar is. Items to be hand ironed are disted through an overhead forced air im to a row of presses.

or equipment in the plant includes and machines for hospital gowns and



other clothing, with special units for collars and sleeves. There are patching machines for minor repair jobs, and units for detecting worn fabrics when items are passed over a rear-lighted frosted glass panel.

Shortly after its opening last June, Booth Avenue Hospital Laundry was already handling 20,000 lbs. of laundry daily. With the phasing out of individual hospital laundries and the expiry of last commercial contracts, the total has now jumped to 50,000 lbs. It will increase further when hospital expansions are completed.

"Many of the economic benefits of a centralized laundry would be nullified if each

hospital sent and received its own linen items," says Donald Blackburn, general manager. "When standardization is completed and existing supplies used up, each hospital will receive laundry from the shelf, avoiding the necessity of marking and tagging."

As might be expected, an operation this size requires plenty of power. On a typical wash day, for instance, the laundry will use more electricity than 500 households. And every day is wash day down on Booth Avenue.



Hailed as the world's largest institutional laundry, this highly automated operation takes in the washing from major hospitals in Toronto.

better by half

by Lois Lane

factory-built homes may be Canada's answer to the housing crisis



If half a house whizzes by on the highway one day, you're not dreaming. You've just been introduced to Canada's newest method of construction - the factorybuilt and assembled home.

Full size assembly-line homes are already being transported to about 20 communities in Ontario and two in Quebec. There they are bolted together on prepared foundations and are ready for occupancy in a few days. But this is only the start. Within a few years entire apartments are likely to be transported by truck or helicopter for stacking or insertion into steel frames.

To most Canadians, prefabrication has meant cottages or hastily assembled units for temporary use. Now we'll have to change our thinking. Today's factory-built home or apartment means precision craftsmanship under quality-controlled conditions. Most important, construction is accomplished out of the weather.

The housing shortage, already acute in some large urban areas, is expected to become critical in the next 30 years "We've got to do something fast," affirms Raymond Moriyama, the Toronto architect who has the city's Japanese Cultural Centre, the Ontario Centennial Centre of Science and Technology, the Civic Garden Centre and the concept of the new Metro Toronto Zoological Park to his credit.

"It's estimated that Canada's population will stand somewhere between 32 and 45 million by the year 2000. The population of Metro Toronto alone should reach five to six million by the turn of the century," he

Housing today's booming population and the expected multitude 30 years from now is developing into a major battle of wits for architects, building contractors and suppliers. And one solution for those who can afford a home in the \$15,000 to \$20,000 price range seems to be the preassembled dwelling.

Inroads have already been made by A Design Homes, the home-building as of the Aluminum Company of Canada which earlier this year unveiled its \$2 million, 100,000-square-foot plant in Woodstock. At capacity operation, the plant will turn out about 200 comple finished and furnished homes - calle the Alcan Universal – a month

A three-bedroom home with five maj appliances sells for as little as \$17,80 one Ontario community. This price in lot, foundation and all site costs. The largest home Alcan offers is a four room, two-bathroom model. It sells for \$21,400 in Woodstock.

But the public can't buy direct from t factory. The homes are slated mainly planned subdivisions and are handled franchised dealers, although individual may buy a home for installation on th own lot.

At Alcan, many of the home's composition are prefabricated outside the factory, I for assembly inside. Construction is c standard wood frame floor joists, ply subfloor and 2 x 4 stud walls with fibe insulation. Plywood sheathing is cov with outside aluminum siding, while interior is conventional gypsum dryw The roof has a truss frame and aspha shingles.

Built to exceed Central Mortgage and Housing Corporation standards and r those of the National Building Code, pieces fit together on the assembly lin like a giant jigsaw puzzle. Laid out or the floors, walls and roof trusses are huge vices and fastened together wit pneumatic nail guns. Once insulation sheathing and drywall panelling are installed, the completed sections are hoisted on the assembly line by crane the unit rolls along the line, siding ar roofing are applied and interior partit installed together with the rest of the interior and exterior fittings. All wiring



nbly-line homes under ruction at the plants of Alcan, and Precision Prefab, below. bedroom Alcan home is shown for occupancy, bottom left.

bing is inspected to ensure it conforms nadian Standards Association ations.

completed half, which travels down assembly line with its mate, is placed on cial trailer and transported to the site. We halves are connected together on undation, the exterior and interior ed off, plumbing and wiring hooked d the furniture unpacked — all in ours.

homes may be heated by oil, gas or icity. They are equipped with all-hum wiring which, according to any spokesmen, costs about 25 per ass than the conventional type.

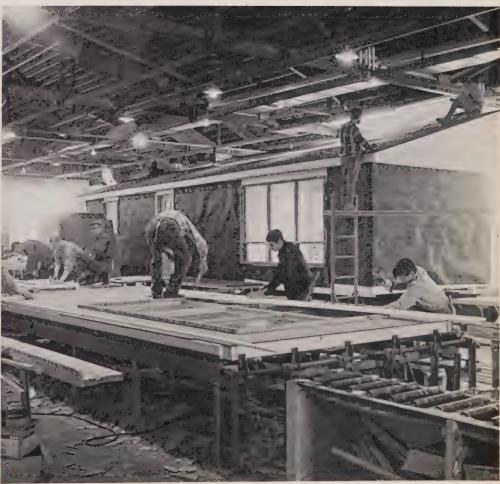
g several other manufacturers breakto the factory-assembled home
It is Precision Prefab, which offers
electric home with five major
Inces for approximately \$15,000.
Inown for its summer cottages,
exdale company is now assembling
000-square foot, three-bedroom
offinished with baked enamel
liding. There's even wall-to-wall
at a common in the roomy 11 x 19-foot
office.

ge kitchen has smart provincialabinets and is equipped with electric drefrigerator, washer, dryer and at fans. Each room has thermoilly-controlled electric baseboard gunits. The entire house is wired for an service.

the Mitus home, the Precision has been approved by Central age and Ontario Hydro and is availating by building franchises across Dvince.

transported our homes to Ingersoll, town, Thorold and Espanola," says of sown, sales manager. "I must admit hort was in my mouth when the first riled out of the plant last November.





Indoor construction speeds the building process. Photos were taken at the Rexdale plant of Precision Prefab.

trailer and there was very little adjusting to do on the site.'

Mitus is built in two sections and joined together on the foundation, which can be either a full basement or concrete slab. Unlike the Alcan home, the Mitus can be purchased from the franchised dealer by individuals who have their own lot. Both manufacturers have the same problem, however - they can't keep up with demand.

Of course, it's difficult for the city dweller to take advantage of this breakthrough in home construction technology. For one thing, building by-laws in many large municipalities at present forbid the erection of that type of home. For another, land prices in the cities are so high that anyone fortunate enough to own a vacant lot would be more likely to order a custom-built home. Chances are that some form of multiple family dwelling will ultimately be the only type of accommodation available to city people.

In fact, the wizards of the construction industry have dreams of plugging readymade apartment units into cage-like steel frames, hanging units on cable from giant towers and even spinning cocoon-like structures out of plastic and fiberglas that can stand tremendous stress and be stacked at will.

However, fancy is one thing; reality another. Europeans, under the pressure of population rushes to the cities for years, are in the forefront of system building in which every component is precast or precut to a set module in the factory and assembled on the site.

European builders have this method down to such a fine art that crosswalls, floors, elevator shafts, stairs and landings, refuse chutes, ducts and even foundations are pre-cast in concrete and shipped to the site. When assembled, the building goes together with tolerances of less than 1/4 inch.

Building precision of this type depends on the module or any set figure or multiple of

that number that will work for prefabrication. Mr. Moriyama notes that the Japanese have been using this type of design for over 2,000 years. Japanese houses are generally simple one-storey structures built on a rectangular plan rigidly controlled in its proportions. These are based on the traditional sleeping mat called a tatomi, measuring six feet by three. The house, almost entirely prefabricated of wood with paper partitions, is a picture of proportion, simplicity and grace.

In Canada, apartment prefabrication is now under study by the National Research Council. Recently, Bramalea Consolidated, of Ontario, purchased the system building rights from Skarne International AB, of Stockholm, Sweden. Bramalea hopes, if studies progress well, to be in business next spring at its present location near Brampton and delivering units within a 100-mile radius of the plant.

Expo's Habitat '67 was Canada's first venture in multiple unit building where the entire apartment unit was produced in concrete and erected on the site.

"Habitat's concept was excellent," Mr. Moriyama says, "but could you imagine the units blown up in light-weight plastic instead of being constructed in concrete? To meet our problems we must keep up with the technical capabilities of our time.

"We also must get rid of our antiquated building by-laws and adapt a standardized code across the country. Most urgently, all of us connected with the building profession and those outside, such as sociologists, must work together to make any massive housing program feasible economically and work for the people."

Because of its relative simplicity and flexibility, electric heating is ideal for factory-built apartments and homes. There'll be a waiting market as Canadian acceptance of prefabrication grows.







hink sessions

e men behind the municipal utilities the pattern for the future at MEA and AMEU business meetings.



OMEA president J. R. Philips, seated left, with officials of District 1
OMEA. With him, also seated, are district association president C. A. Baker,
Trenton; past president R. K. Elliott, Deep River; 2nd vice-president W. A.
Taylor, Peterborough. Standing: L. L. Coulter, Ottawa; A. C. Tingley,
Nepean; A. J. Bowker, Gloucester; Gordon B. Nourse, Picton, and
M. R. McIntyre, Prescott.

trict 1

ne running out nea chief warns

government's final decision on taxaproposals, warns OMEA president Philips, of Brockville.

r. Philips, one of three speakers at the lal meeting of the Eastern Ontario licipal Electric Association in Smiths who criticized proposals made by the trio Legislature's select committee on tion, said the government's final decivill probably be made known early 369.

Vhile still not too late to influence the frimment's decision on any items with the we don't agree, time is certainly ing out," he said. He urged commisters to read all sections of the report fring to Hydro.

pout 130 delegates and their wives ded the two-day conference which with underground wiring, pensions, lity insurance, electrical inspection, relocation costs, Ontario Housing oration procedures and public rela-

P. Cliff, Ontario Hydro first viceman, and W. A. Taylor, chairman of borough Utilities Commission, cited on the property of implications in the tax report of e Hydro enterprise.

select committee's tax recommendation could have a severe impact on OnHydro and the municipal electric as, said Mr. Cliff. Proposals on propaxation are not yet clear, but could remillions of dollars when rising are already putting pressure on the country of t

Mr. Cliff said Hydro contended full and equitable taxes are now being paid.

"We agree with the principle of equal treatment of equals, but we must emphasize the dangers of making comparisons between enterprises which are essentially different in objectives, responsibilities, structure and operating conditions."

He said Hydro's responsibility in providing electric power at cost across the province was among the most obvious differences. Private enterprise, on the other hand, was free to pick and choose the areas it will serve on the basis of profitability.

Mr. Taylor, who gave the district's legislation committee report, said that Hydro operations are never subsidized and should not be classified with such enterprises as hospitals, cemeteries and recreation facilities

On a proposal to subject revenue surpluses to municipal by-laws, Mr. Taylor said such action would give the taxpayers the right to control a business enterprise operated in the interest of power consumers.

grasp every chance to go underground

Municipal utilities should seize every opportunity to extend underground services in the downtown areas of their communities, says A. L. Furanna, general manager of London PUC.

Mr. Furanna and F. L. G. Askwith, assistant chief engineer of Ottawa Hydro and AMEU president, were members of a panel which discussed ways and means of financing conversion to underground wiring at the OMEA's District 1 meeting.

L. L. Coulter, of Ottawa, the panel moderator, proposed gradual elimination of

overhead wiring in core areas and said it would be only a matter of time until the heart of every centre had underground service.

"One of the greatest chances for good public relations is the removal from the centres of every city, town, village and hamlet of unsightly wires and poles," he said.

Panel members described the progress over many years of the underground services in downtown London and Ottawa. London started its program in 1930 and Ottawa has had underground cables for 40 years.

Mr. Furanna said a utility can't afford to retain overhead wiring where the load has reached a certain capacity, and advised PUCs to consider higher voltages before conversion.

Mr. Askwith said Ottawa had no experience in converting older residential areas to underground. He also said it was "very difficult indeed" to justify underground cables when much overhead wiring has been in service for only 12 to 15 years.

Delegates passed resolutions urging the Department of Highways to pay a greater share of costs incurred by utilities in relocating lines along highways, requesting Ontario Hydro's Insurance Department to make a study of the adequacy of liability insurance to protect utilities against damage suits, and protesting as "unfair practice" Ontario Housing Corporation directives to install gas systems in new housing projects.

A resolution submitted by Prescott PUC urging that electrical inspection "be carried out by some body or agency that has no connection (at least in the eyes of the public) with Ontario Hydro" was overwhelmingly defeated.

A. J. Bowker, of Gloucester Township.



Kingston PUC manager G. R. Davis receives "meritorious service" award from Electrical Utilities Safety Association president L. G. Tron, right. Mr. Davis, a former president of EUSA, has been a director of the association for 13 years.



J. L. G. Coligan, left, of Prescott PUC, receives a long-service award from OMEA president J. R. Philips at the Smiths Falls meeting. H. Wilmott Rose, of Frankford Hydro, received a similar award.



Jack Cook ... his last conference?

who chaired the resolutions session, recommended rejection of the resolution and took issue with the Prescott contention that electrical inspection tends to destroy Hydro's image. He said that if inspections are "properly done" they can be a useful way to keep in touch with customers and cultivate good relations.

change - and one of the men behind it

Thirty-six years ago, a small group of utility managers and office staff met in Windsor to witness the wonder of the era - a mechanical billing machine.

As they shouted above the clatter, little did any of them envision the sophisticated management techniques and complexities of the computer age that lay ahead. Neither did anyone realize how this informal gettogether would persist year after year to become a full-scale working conference for utility accountants and administrators.

Yet the 36th and latest meeting of the AMEU-sponsored Western Ontario Accounting and Office Administration Section in Kitchener last month attracted 250 delegates. On the agenda was a variety of subjects ranging from "Human Relations Within the Office" and "Employment Interviewing" to panel discussions on pensions.

The story of this highly successful conference is also the story of a restless and shrewd individual. Jack Cook, now assistant general manager of Windsor Utilities Commission, attended that inaugural meeting in Windsor in 1932 as a fresh-faced young man in charge of credit collection and billing.

Over the intervening years he's missed only one conference. He was present at

the 36th meeting, but it may well be his last. For Mr. Cook is nearing retirement.

"Next year's meeting will be in Windsor so I may turn up," says the man who for 16 years was secretary-treasurer of the Western Ontario Section and who served another seven as chairman. "I'm due to retire, though, in 1969."

Not that Jack Cook is the kind of man to hang around when he feels his work is done. "When someone succeeds me I don't want him to be a rubber stamp replacement," he says. "I'd like to be able to return four years later and not recognize the job.'

Mr. Cook is all for constructive change, which is what the conference is all about. The present chairman, R. A. Ion, told delegates in his opening address: "In adjusting to these changing times and advancing technology it has been necessary that you increase your skills to fulfill your job. Don't underestimate your position. But don't think that the knowledge and experience you have acquired on that job will stand you in good stead in the future.

Keep an open mind to new ideas and methods and be ready to adapt new techniques wherever possible.'

Jack Cook's sentiments, exactly.

District 6

delegates have their say

As if anticipating the remarks of OMEA president J. R. Philips, the executive of the Grand Valley Municipal Electric Association presented their annual convention at Stratford with a completely revamped

Mr. Philips had told delegates that, along

with death and taxes, change wa evitable.

The program changes centred switch from guest speakers to discu periods. The new format gave every gate the chance to air his own view

After a brief general meeting, dele were split into eight groups of 10 to mull over a list of questions arising day-to-day utility operations. Each di sion leader later summarized his gi thoughts.

Summing up a question about the general rate, Dave Durward, of Galt, was something that should be adopt utilities as soon as feasible. Not only make life simpler for the utilities, it er customers to better understand their tricity bills.

Speaking of rental water heaters, Seath, of Stratford, said the const of his group was that there shou uniformity in rates - "not, however, detriment of a sharp utility that is a use a lower rate as a tool against

Turning to delinquent accounts, Mr. # said the feeling was that an attempt s be made to collect them when cust moved from one municipality to an There were legal complications, how

Mr. Philips interjected that there bill before the provincial legislature to better grounds for collecting this ty debt. It had been proposed by North Hydro commissioner Arthur Meen, v also an MPP.

A group headed by Ivan Bradle Waterloo, identified the most const customer problem as "high bills". H more phone calls and personal incl were received in this area than any To avoid estimated bills, he suggeste meter cards be left when no acces



officials of District 6 OMEA include, front row: A. McGugan, erston, 2nd vice-president; G. A. Shepherd, Elora, past president; G. D. Seaforth, president; Ontario Hydro Chairman George Gathercole, president; D. M. Seath, Stratford, secretary-treasurer. Back row: W. M. In, Elmira; C. C. Smith, Guelph; D. R. Larkworthy, Stratford; Mills, Goderich; J. McMichael, Listowel; Clarence Lipphardt, ston; W. A. Smith, Waterloo.



Round-the-table discussion groups were a feature of the District 6 OMEA meeting at Stratford.

ed and that customers might even ne in the reading as well as mail the

vo resolutions were presented to the rention. One increased the local assoon's dues by 25 per cent. The other with power costing and was identical ne presented at the OMEA's annual ring in Toronto last year. It was referred a provincial association's power cost-committee at that time.

of power charged by Ontario Hydro hade effective until, where necessary, coal commission received approval to its retail rate. Both wholesale and rates should become effective at the time, the resolution stated.

Gorge Shepherd, of Elora, chairman of essolutions committee, said it was preand again "to keep it before the assofin".

ating the tity iceberg

because advances in communicanand transportation are leading people on pare their institutions with those in countries, Andrew Frame, chairman filington PUC, told a recent distriction of the OMEA.

Warned delegates there was an intertical trend toward larger municipalities on elimination of multi-level governates the municipal area in an effort to

reduce costs. The public was demanding these changes because the tax burden was reaching its limit. For the same reason, people were also demanding that government take advantage of the new technology available in many fields.

"The same demands will come to the public utilities," said Mr. Frame. "If you aren't big enough to take advantage of new technology, the new types of equipment, the public will require that you get big enough, one way or the other."

These changes would be made by the Ontario legislature, but the primary instrument of change should be the OMEA itself. "We have had 60 years of experience with the people and the growth of our system. Now, in the mood of the times and the new technology, let's put our experience to work."

Mr. Frame said that utility personnel should take advantage of the revolution in transportation to investigate the methods of other utilities.

"Let's find out how municipal systems in other countries are working," he said. "We can start with our neighbors in Canada and the United States. The Europeans have new methods in electrical service and distribution and, if we can make the right contacts, we can learn what's going on in Europe and how to make it work in Ontario.

"We will be criticized if we spend money to keep up with the times. But we will be criticized much more if we don't find out what's going on in the world and make our system the best possible," he added.

Mr. Frame said that people and ideas were more mobile because of cheap, faster transportation and almost instant communications.

"News and ideas are transmitted faster than ever before," he said. "When improve-

ments are made in one area, it is known about them in other areas almost immediately. The new customer you signed up on your utility books this morning may have lived in Quebec or Manitoba yesterday, or perhaps San Francisco, or New York, or even Paris or London or Hong Kong or South Africa, because in these days of jet travel people move around a lot. They immediately begin to compare your utility system with what they have known in other places."

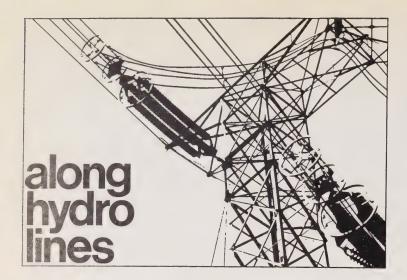
Mr. Frame told commissioners that the increased political activity at the federal level would probably spill into provincial and municipal politics.

"There are going to be many more candidates for municipal offices and one of the complaints against the elected hydro commissions that 'there are too many acclamations' is going to disappear. And in these elections coming up, some of us are going to be rejected and defeated at the polls."

Mr. Frame compared the public relations situation of the municipal utilities to an iceberg, saying that the public saw only the tip but that the whole iceberg was the problem.

"So far we have seen the tip and been treating only the tip of the iceberg. We have started communication programs with the public and with our own employees. There has been an intense activity in our Legislation Committee, submitting briefs to various commissions and government departments, all in an effort to get our story across to the public and senior levels of government.

"But I suggest to you today that we can't treat only the tip of an iceberg. We can't leave the body of an iceberg floating with the tip cut off. We'll sink just as fast and sure if we hit the submerged iceberg as the one that we see."



Plutonium sale

Plutonium, a by-product from the reactors at Douglas Point and NPD, will be sold to France for research into the development of plutonium-fuelled fast-breeder reactors.

The \$1.5 million sale involves the delivery of spent fuel to a nuclear fuel reprocessing plant in Belgium. There, the plutonium will be extracted and shipped to southern France for research

The French Atomic Energy Commission is studying the feasipility of breeder reactors for the production of electricity. France has assured the Canadian government that the atomic material will not be used for military purposes.

Make kilowatts – not war

An armory may sound like an odd place to find a utility, but in Orono that's where the local commission hangs its collective hat. Actually, the armory isn't new to the utility, which has occupied the rear part of the Park Street building since 1946.

However, there's no comparison between today's building and that of only a few months ago when the commission took over the entire structure. The front part was completely modernized and insulated for electric heating and the rear section altered for a storage area and garage.

Ontario Hydro Chairman George Gathercole wielded the scissors at the opening of the renovated building

Reconstruction began July 1 and was completed in September at a cost of \$10,000. The hardwood floor was removed and replaced with concrete. The front of the structure was altered to provide a new entrance with attractive doors and large windows. Perimeter walls and the ceiling were insulated and woodgrain



Congratulations all round

panelling installed throughout. Now, there is a lobby, con board room and manager's office, main business office and section for records. There's room at the rear of the buildi two utility trucks and other equipment.

With Mr. Gathercole are Trustee D. M. Simpson, con-Bob Smith, Chairman Floyd Nicholson and Trustee E. R. V.

Former editor dies

Boyd Graham, editor of Hydro News from 1952 to 1962, died recently in Toronto of a heart attack.

Boyd, 56, was an affable, well-liked man known both inside Ontario Hydro and throughout the municipal utilities. During his 19 years with Hydro he also worked as special assignments editor and publicity supervisor. He left the commission in 1965.

At that time, he returned to his home town of Lindsay to become publisher of

the Watchman-Warder, where he had worked before and serving in the RCAF during World War II. In the fall of Boyd joined the information section of the provincial Depart of Labour.



municipal briefs

Double its land area is what the town of Newmarket is se in a future hearing before the Ontario Municipal Board 3,700 acres would be annexed from neighboring East Gv bury, Whitchurch and King townships under the proposal population would immediately rise by 5,000 to 15,000.

Ernest Dent, retired manager of Orono Hydro, was rehonored by the local commission. He received an english barometer in appreciation of his 22 years of service to the sy Preston PUC received the 1967 American Water Works As tion safety award at a recent commission meeting. The av presented to utilities maintaining excellent safety records waterworks department. Preston had an accident-free year Shorty Breckon, or more formally Gordon A. Breckon, w guest of honor at a party marking his 39 years of service t Frances PUC. He is the first employee to retire from the ut Oakville PUC is picking the brains of its 16,000 customer commission has approved manager Ross Lamb's recomm tion to use advertisements to seek advice on how it can customers better. Senders of the best suggestions may be i to commission meetings to expand their ideas.

Niagara Falls Hydro is studying a new billing policy which call for a deposit from all customers. Harold Brownhill, g manager, says the commission is "writing off about \$6,000 debts each year and some move must be made soon to halt All East York citizens may soon be served by East York h On January 1, 1967, the town of Leaside became part of York – but Toronto Hydro continued the electrical service. tiations between the two utilities aimed at switching the tomers are expected to be resolved early in 1969.

When Mrs. John Dunn, wife of the North York Hydro chail had a flat tire in Muskoka last summer, two knights on a white steed - a Hydro truck to be exact - came to her re-The two, Ken Boyes and J. Martin of Ontario Hydro's Bracel area, changed the tire and forgot about the incident - bi Dunns didn't. A letter from North York Hydro to the Bracel

ce conveyed appreciation of the "good public relations" work the two men.

mond Johnson has been named data processing supervisor Peterborough Utilities Commission. Mr. Johnson, a former AF jet pilot, joined the PUC in 1964 as a data processing nee.

n though only five per cent of those eligible voted, a by-law easing the number of commissioners in South Grimsby ynship PUC from three to five has been approved.

nton PUC's loss was education's gain. Howard Hallick, eral superintendent for five years, resigned to accept a teach-position at Loyalist College. Mr. Hallick, who started with the C in 1958 as a planning technician and then became engineer-superintendent, is instructing electrical apprentices.

e years without a compensable accident is worthy of recogon. And that's exactly what happened when Picton PUC's trical department received an award from the Electrical ties Safety Association last month for such a record.

ting a gas lamp may sound like an odd duty for a 45-year ro veteran, but that's just what Frank Murdock, of Wallace, did. It all came about when the town named a park after Murdock to honor his 35 years as a member of the Parks rd. The local gas company has provided a gas lamp for the and Mr. Murdock turned it on as part of the opening mony.

rge Cook, chairman of Preston PUC, died recently after a tillness. He had been a member of the commission since and was awarded a 15-year certificate at the OMEA ict 6 meeting shortly before his death. At the same meeting as re-elected vice-president. In earlier years, he headed the ct association. Mr. Cook, 59, was born in England and came anada in 1929. After stays in Montreal and Toronto he moved teston in 1949.

rborough Utilities Commission general manager Howard cell and chief engineer William Tait recently toured electrical ms in Virginia and North Carolina. They were surveying torks that had switched over to 44,000-volt primary distributions of the PUC is about to do. But they found that, in respects, Ontario utilities are ahead of their American terparts. Says Mr. Powell: "It was a disappointment to ever that the utilities we visited did not have as sophisticated estem as Peterborough." The two men found the use of from underground cable and the plowing of cable trenches iterest.

ingham, it will be the top four men who sit on the PUC elections are held later this year. Town council voted at a taken meeting to increase the size of the commission from three to the mayor, by virtue of his office, sits as the fifth componer.

st coal

to 26,000 tons of coal were last month delivered by boat to room generating station, situated on the St. Clair River 14 south of Sarnia. The delivery was the preliminary shipment a east 500,000 tons of coal due to arrive at Lambton before use of the 1968 navigation season.

Gier, more than 22,000 tons of low-grade base coal were coded at the site to form a foundation for the three million-pacity open storage area. The Lambton plant is expected power early next year and be in full operation by

-through symbol

ellage of Casselman in Eastern Ontario recently got a bonus he local Hydro – a new office building. Casselman Hydro direviously occupied rented quarters next to a restaurant.



A transparent plug for Hydro

When the restaurant wanted to expand, the utility either had to rent other accommodation or build a new office. They decided on the latter.

Serving just over 400 customers in a predominantly French-speaking community, the utility's biggest customers are a creamery, which produces tempting Cheddar cheese, and a granary.

Seen near the utility's unusual symbol-windowed door are Commissioners Aime Menard and Aime Brabant, Reeve Gabriel Carriere, Manager George Lafleche, Commissioner Jean Yves Levesques and Chairman Romeo Laplante.

The big one

Construction of the main dam at Ontario Hydro's Lower Notch generating station will be undertaken by three private companies – C. A. Pitts Construction of Toronto, McNamara Corporation of Don Mills, and the Atlas Construction Company, Montreal.

Part of the \$30 million contract will involve the placing of two million cubic yards of material, mostly earth and rock fill. The dam will be 2,200 feet long and about 180 feet high. A 2,000-foot diversion tunnel has been built to take the Montreal River around the site so that men can work "in the dry".

The 244,000-kilowatt hydro-electric station is being built near Cobalt under the supervision of H. G. Acres and Company, Niagara Falls. It will cost an estimated \$51 million and should produce first power in 1971.

Back to school

Opening up a new horizon of learning, 22 municipal utility supervisors gathered in Toronto last month to take a close look at the principles of management. It marked the first venture into supervisory training for the Association of Municipal Electrical Utilities.

The week-long course was the brainchild of the AMEU's manpower planning committee. It was based on various courses



Table talk

given to Ontario Hydro personnel by its Manpower Resources and Development division. Three Ontario Hydro men - Len Marshall, Hugh Hudgins and Barrie Haverluck - provided direction for the participants. London PUC general manager A. L. Furanna, a member of the AMEU manpower committee, was primarily responsible for the course.

Conducted in a round-the-table manner, the course assisted the utility people to develop for themselves a better understanding of human behavior and management processes. The characteristics of people and organizations, as well as the principles involved in the management process, were examined in detail. In the morning, afternoon and evening sessions, participants looked at items like why people go to work; influence of the group on the individual; problems in giving orders and what an effective manager does.

New job after 50 years

For anyone who knows John Vanderheiden, it doesn't sound unusual that after 50 years and nine months with the London PUC he's taken up a new career.

John, who headed the PUC's sales promotion department from its inception in 1959 until his recent retirement, took only a week off between jobs. His new position is education administrator for the Industrial Management Clubs of Canada.

Since he joined the utility in 1917 at the age of 14, he has worked in just about every area of operations. He became a foreman in 1946 and served as safety supervisor and assistant plant superintendent in later years.

In his new job, Mr. Vanderheiden will travel across Canada visiting the 44 chapters of the organization. He says, however, that he'll be active only eight months of the year - the rest is "vacation" time. He was recently guest of honor at a reception and dinner given by the PUC to mark his retirement.

speaking of pr

The public relations activities of the municipal utilities will be outlined regularly in this feature by the recording secretary of the joint OMEA-AMEU committee. The first in the series deals with the organization behind the province-wide PR program.

Little more than a year ago a group of commissioners and managers, drawn from the Ontario Municipal Electric Association and the Association of Municipal Electrical Utilities, was appointed by the respective boards governing the two associations. Their job was to formulate a general policy for public relations in electrical utilities throughout the province and guide a task force in the planning and implementation of activities at provincial, district and utility level. The group's name is the OMEA-AMEU Public Relations Co-ordinating Committee and it tackled

The members of the committee were selected from the ranks of the two provincial bodies to bring a broad range of experience and appreciation of utility affairs to bear on a program for Hydro utilities. A co-chairman was appointed from each association to ensure that both policies and practices recommended by the committee would be practical and useful whether the local utility was large or small, urban or remote, newly-formed or long-established. Their common interest was to help municipal electrical utilities communicate with their customers.

Any communications program must be expressed in simple and meaningful terms. It must concern itself with day-to-day activities and the relationship between the utility and the community. The committee felt, therefore, that the phrase "Tell the P would serve as both a guide and an objective to commiss managers, and staff throughout Ontario.

Even the job of communicating with the hundreds of mu utilities in the hydro system called for special efforts and st cally located work forces. Nine district public relations comme were formed to act as an extension of the co-ordinating mittee. These local committees encourage the use of relations material among utilities in their own district, and progress back to the central group. Common problem round-table discussion take priority on the agenda of their workshop in Toronto, where they have the opportunity to the next stages of the program.

What has been accomplished so far? Most of the interest of organizing and meeting with district committees has completed. A basic communications program that could plemented in any local utility has been resolved. Local mittees are participating in various activities in their dismeetings and with individual utilities. Material for prod and distribution at the local level has been made availa every utility manager. The co-ordinating committee has preparation many items which will come to the attent commissioners and managers this winter.

And what of the results? Utilities large and small acro province are putting the program into action. Details c experience and success will be discussed in future co-Their efforts to improve communications indicate the regarespect they hold for good community relations.

New post for PR man



William S. Killough, public relations for Ontario Hydro's Eastern Regio been appointed supervisor of field s for Hydro's public relations divis Toronto.

Mr. Killough worked as a rad nouncer and news editor at Niagar and Guelph before joining Hydro ir as a guide at the Niagara River geni stations. Later he moved to Co where he was involved with the St

rence Power development. After a short period in Toro assistant information officer, he was appointed information officer in Ottawa in 1959. He moved to Belleville six yea when Hydro switched its regional office there.

In Belleville, Mr. Killough has been active in a num community projects including the United Appeal and Cencommittee. He is widely known throughout the eastern the province, having close contact with the municipal utili

September energy production

Primary energy provided by Ontario Hydro in September totalled 4.26 billion kilowatt-hours, an increase of 7 per cent over the same month a year ago. For the fir 9 months of 1968, the total is 40.62 billion killowat hours, up 8.4 per cent over the same period last year.

Adjusted for seasonal influences, primary energ demand in September was 4.57 billion kilowatt-hour 1.5 per cent less than the previous month. The seasor ally adjusted total for September represents 54.8 billion kilowatt-hours at annual rates. This is 394.1 per cent of the energy demand in 1949.



Sex and the single chimney may never make best-seller list but well-stacked heating into have been getting plenty of ink in the ronto papers of late. And while the subject is surrounded in smog, some facts are beging to emerge.

For one thing, the day is past when the mney could be considered simply as a pile of cks extending upwards from a boiler to a redetermined point in the upper atmosphere, addition to conducting gases and other efflus of combustion into somebody else's backd, the modern smoke-stack must now meet by additional criteria.

must: (1) serve some secondary, unrelated pose and (2) convey a message and be thetically meaningful.

The hullabaloo all started with Toronto cho's proposal to probe the ozone above its entown heating plant with a 700-foot mney. "Blasphemy" cried the multitudes in they learned its sole intent was to waft the into an area previously reserved for astrots and other more heavenly bodies. That's in the experts stepped in.

ombine the smoke-stack with an observation of, said one, while another held out for a folying restaurant near the top.

ple latter appears to offer more food for hight and provides ground for unique refinents. For instance, customers might be allowed or oil wieners and shishkababs to their individants as the simply by thrusting barbecue forks into higher stream. And to establish a reputation, ting beats a special dish—like casserole of wh

vo suggestions volunteered by a Toronto espaper were given high marks for originality dejected in something of a huff when it was sovered they had been tendered tongue-in-

mewhat too commercial, in our judgment, it is called for a needle-like stack slender of the spear up through the centre of a pile fibber tires. These would range from earthmars at the base to mini-minors at the top. ir nanufacturers, it was reasoned, would offer at intal fees for a display rack of these pro-

Fiher unsightly, perhaps, but such an ar-

rangement might offer additional benefits in the realm of safety. Aircraft pilots lost in the smog would surely appreciate the cushioning effect of the rubber bumpers.

The newspaper's second suggestion appears rather frivolous and deserved short shrift. Fashion the chimney top after the likeness of a city father, went the proposal, and let the gases escape from the most appropriate aperture — presumably the mouth.

- Next, the controversy shifted to Ryerson Polytechnical Institute where another central heating plant was proposed but left in limbo due to lack of sufficient verve and imagination on the part of the smoke-stack specialists. The best they could suggest was a 16-storey tower of learning wherein the classrooms would encircle the chimney.
- But no concrete evidence of the trend toward the aesthetic in smoke-stack design will be visible until the new heating plant to serve the city's downtown hospitals begins to take shape. It will sport a 450-foot stack and the architects had a ball deciding what it should resemble. The field was open so long as its primary function defied identification.

"It will have a very important message," the firm charged with the design assured us, and their make-up artists considered everything in the way of disguise from ceramic decorations to geometric motifs and pastel shades of concrete.

Their final decision was something of a letdown. The stack will look like a rocket. Fins and floodlighting will add to the illusion.

But no mention has been made of the message. Standing vertical, as conceived, the stack-cummissile would seem to have very little to say for itself. Fortunately, there is a solution. Tilt the thing in the direction of Russia and we have a subtle but powerful message.

So far, we've been considering smoke-stacks of widely varying appearance and purpose but with a single common denominator – height. Must they be tall?

According to one physicist, we should be looking toward the short and the plump in the design of our chimneys. Equipped with shutter and pump mechanisms, he claims, fat stacks could puff out smoke rings which would rise to heights of 10,000 feet before dispersing.

Now we're getting somewhere and it's to be hoped Hydro engineers will take note. In addition to cleaning up pollution problems, puffers of this sort installed at steam plants could save the Commission millions of dollars in sophisticated communications equipment. Hire a handful of Indians and set them to work sending messages in the tried and true smoke-and-blanket routine of their forefathers.

■ So much for smoke-stacks. We'd like to turn now to the matter of survival. From one of the safety associations comes a rather intriguing treatise on using the family car as a survival kit in the event one should become stranded in a blizzard, desert or flood. It says that with the use of a little imagination, the auto contains all the requirements for staying alive — except food.

Hub caps appear to be the most versatile single gadget from the survival point of view. They can be used for digging, for collecting water from the rad in the event of a fire, or for sending



So the eggs do taste like old retreads – dish 'em up!

smoke signals. The latter can be generated by igniting oil drained from the crankcase.

Other emergency procedures include using the rearview mirror for signalling, removing a head-light while attached to the battery to attract attention, burning tires for warmth and signalling, and starting a fire with a gas-soaked rag ignited by sparks from a sparkplug wire.

After a day or two of this sort of treatment, there wouldn't be much left for a Sunday drive but, as the item suggests, the means of survival inherent in the auto are limited only by the imagination.

Other procedures that come to mind are the use of wires from the electrical system for snaring rabbits or for hanging oneself in the event things get too dismal (exhaust fumes are another possible out). If floods were the problem, skinny, circular people could fashion diving suits out of inner tubes while sun visors could serve as flippers and exhaust pipes for snorkels.

Nor should the auto be entirely written off as a food source. Some time ago we drew attention to an Australian chap who undertook to consume an entire automobile in the course of a year – just for kicks. Surely an engine block or even a fender would provide enough iron and other important minerals to stave off starvation until the Marines arrived.

Finally, for those interested in a bit of light reading, we can recommend a recent paper prepared jointly by our research department and an outside authority. It has to do with evaluating the resistance of the soil to certain types of loads and should prove a real boon to anyone with a yen to build transmission line towers and the like.

Somewhat misleading to the layman, the paper is entitled "The Ultimate Uplift Capacity of Foundations".

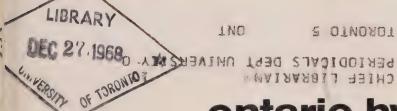
It will be of no assistance whatsoever to the office girl seeking guidance in the matter of underwear performance.



Follow the leader? Not likely. Looking remarkably like an intercontinental missile, this is only one of 48 huge boilers being installed at Hydro's Pickering power station, near Toronto. Pickering is one of the biggest nuclear power undertakings anywhere. To cut costs, Hydro has to think big. That's partly why Ontario's electrical rates are still among the world's lowest. Electric power costs about the same today as it did 10 years ago. And there aren't many bargains around like that.



· craftsmen in glass



INO S OLNOWOL

ontario hydro news december/1968



Ontario hydro december/68

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the cover

Craftsman at the Toronto studios of Robert McCausland assembles a stained glass window on an easel for inspection before leading. More about the studios and the ancient art practised there is told in the following pages.

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On behalf of the Commission, best wishes for a Merry Christmas and good health and well being in the New Year.

Chairman Ontario Hydro



photos by Harry Wilson

The deepening shadows in the chancel grow, And the day wanes — then like a flood of fire The Great West Window all aflame doth shine, And lends a mystic glory to the song That floats from out the dim half-lighted choir.

- John Keats

the ancient art of stained glass

by Sheila Kenyon

If you've ever wondered what Christ or Moses or Abraham really looked like, there is a man in Toronto who can tell you as well as anybody.

His name is John G. Ramsden and he follows a trade that is 900 years old . . . the making of stained glass memorial windows.

For the past 50 years, John Ramsden has studied old documents and amassed information on Old and New Testament personages. In addition to work for the Christian church, he and staff artist Edward Low have also designed many windows for the Jewish faith.

Mr. Ramsden studied at Toronto's Central Tech and the Ontario College of Art before joining the firm of Robert McCausland half a century ago. The company had been founded in 1856 and was a well-established and recognized studio when he joined it as a teenager.

In 1870, the firm had sent a shipment of windows by rail, steamer and "Red River cart" to the small settlement of Fort Garry, now Winnipeg. And windows designed for All Saints' Cathedral, Aklavik, have





weathered many a chilling winter in the northernmost cathedral of the Anglican Church of Canada.

In 1899, Robert McCausland produced one of his most notable designs - the 16 by 23-foot stained glass window illustrating the building of Toronto. This was installed in the then new City Hall and will eventually pass into the hands of the Toronto Historical Board.

Today, John Ramsden is in charge of the company. He has designed or helped to design many famous windows commissioned by churches and individuals and shipped to such places as the Bahamas. Trinidad and Mexico. More recently, the studio designed stained glass windows for a masonic building and a series of memorial windows for the Royal Military College of Canada, Kingston.

The present McCausland studio is hidden away in a small industrial complex in the

west end of Toronto. While other businesses on Chauncey Avenue may be engaged in more mundane chores, a group of artisans and artists at the McCausland studio practise a trade little touched by modern invention. There seem to be no short cuts to the making of a magnificent stained glass window. It is still an artistic craft handed down from one generation to another.

A number of Canadian companies are in the field, although McCauslands claim to be the oldest. Most orders are for churches and other public buildings, residential demand for stained glass windows having dropped off in recent years.

The origin of glass and its probable accidental discovery is lost in antiqu The early Egyptians used glass 2,00 before the birth of Christ. Although were successful in producing colore glass, their "clear" glass was always opaque. The art of glass-making spr. from the Mediterranean across Eurc was taken by the Romans to Britain. the middle ages, glass was very exp Sir Thomas More, in his book "Utop describes windows as being either () fine linen cloth dipped in oil or ambe

One of the earliest records of a stain glass window is of one installed in a Benedictine Monastery at Mount Ca in the year 1000. However, few exar of windows prior to the 15th century survive in Europe. In the 16th centur glass ceased to be a luxury and its av ability had a strong influence on the of homes and churches.

"Canadians still ask us to design trac o windows," says Mr. Ramsden. "Occ

-scale drawings represent an important ge in the manufacture of stained glass dows. Top right, John Ramsden with jature sketches of just a few of the dows produced in his studio.





pilly we are asked to make abstract add glass windows for a particular orn setting. We design a window to a gradient of the stock designs the company particular of the stock designs the company particular or the stock designs the stock designs the company particular or the stock designs the stock design

Gesign, or artist's color sketch, is a nure reproduction of the finished flow. It is used by the craftsmen as a life. In the McCausland studio, artists draftsmen work at the unhurried pace viterday — there seems no urgency and smust be handled delicately.

of a design has been accepted by a mr. Low, a staff artist for 17 years, of of the other staff artists, makes a labeled charcoal drawing or cartoon in the detail. A finished window may of the hundreds, if not thousands, of







individual pieces of glass and a cutline or outline drawing is made as a guide.

The cutline is used by the glass cutters and shows the stained glass areas, lead lines (lead holds the glass together), crossbars and supporting stanchions.

The glass cutters make separate paper patterns of each individual piece, rather like a dress pattern. Instead of allowing for a seam they use a three-bladed scissor designed 50 years ago and one of the "modern" tools of the craft. The extra blade recompenses for the seam or lead width.

Once the stained glass pieces are cut, the glass painters take over, reproducing the exact line details of the original cartoon. Then, using the cartoon as a guide, they apply a special oxide of iron pigment mixed with solvent to the glass surface. The painters work at large plate glass easels to which each section of stained glass is held tightly with beeswax. Plate glass allows sunlight to pour through the stained

glass, giving the painter an idea of what the painted area will be like when mounted in a window.

Once the illustrations have been applied, the stained glass is then placed in a customdesigned electric kiln which automatically heats the glass to 1,100 degrees Fahrenheit. This causes the oxide pigment to become permanently embodied in the texture of the glass surface.

"The automatic control saves a lot of time," says glass painter Walter Anderson, "as we no longer have to supervise the heating of the kiln. In the old days, wood and then coke were used to fire the kiln. Gas has been popular in recent years but we find electricity gives a more even heat, which means each piece of glass is uniformly fired."

It takes about two hours for the glass to cool, then the painters carry out a second painting. Once they are satisfied with work, the stained glass sections are returned to the kiln for a final firing ar automatically heated to 1,200 degree Fahrenheit. After cooling, the comple window is assembled on a glass ease inspected.

Now the pieces are ready for leading Lead strips are soldered to the painte glass and cement brushed around the joints.

The finished window is assembled wi instructions for installation and shipp its destination. If near Toronto, a Mca land workman will install the windov

Like any piece of art, stained glass wir are difficult to price. John Ramsden believes that price is secondary in the consideration of a piece of art. Stand designs, of course, are less expensive custom designs. Like an oil painting, though, a stained glass window will it for centuries - a work of art to be enj !6 by generations.



cutters make paper patterns for each of glass. After painting, pieces are an an electric kiln, assembled on an afor checking and later joined with trips.







now to spend Christmas in jail

Harriet Law

day's plethora of electrical and ectronic detection devices is ving the criminal a hard time

e evening last June, a principal in a etro Toronto high school remembered the had left important papers on his sk, and returned to the darkened school get them. A few minutes after he had etly entered his office and was placing papers in his briefcase, a policeman lered the building to apprehend him.

forgotten that the Board of Education recently installed a detection device. sound of shuffling papers had been ted up by the public address system, led to a central monitor and then to a police station.

principal's face was red. But the school ees were gleeful. Here was proof, ed, of the efficacy of their newly alled protection system.

frent – and more humane – to the contraptions first used by the ancient hashs. They relied on mechanical hashs to trap or crush an intruder. And coularly in the last decade have whose in electronic detection devices and from the realm of science fiction deact.

to catch or deter a thief have become sphisticated that it is not surprising of a nucleonics firm in the U.S. reports a nucleonic instrument for crime to which uses safe levels of gamma finion: a burglar alarm will be triggered fuman intruder but not, say, by a cat!

Trecently, Toronto's police chief

The Mackey announced that the city

Commay become the first police system

Note that the city

The Mackey announced that the city

Commay become the first police system

Note that the city

The Mackey announced the city

The Ma

watch two dozen locations simultaneously. One obvious advantage would be to alleviate the police patrol shortage at a plethora of shopping plazas and banks.

Sometimes the mere announcement that the premises are patrolled by detection devices is psychological deterrent enough for would-be thieves. The security manager of one chain of department stores reports that the announcement and installation of a stop-action camera in one store has paid for itself in the first few months by reducing thefts. "How long the psychological effect lasts is another question," he adds wryly.

Whether an alarm system consists of a TV, public address or some other alarm system, it is basically comprised of three types of operating components: a detection unit or sensing device; a control unit for operating the system; and an alarm indicator (monitor panel, alarm bell, viewing screen or loudspeaker).

When all three components are physically enclosed in one box they are safer from attack than when inter-connected by a "line" or signal path, which is more vulnerable to sophisticated attack by professional thieves.

To function with complete success, an alarm system must do two things. It must detect the presence of any intruder, either as soon as he attempts to enter the premises or when he attacks the protected receptacle. Secondly, it must notify this fact swiftly and efficiently to a suitable point, from which immediate action will be taken by the police.

Modern devices which avoid the complex and expensive wiring in older conventional alarms sound like a roll call of gadgets from science fiction. For example, there is the "pressure differential" unit, which makes use of a fan that blows air into or out of a room to be protected. This creates a pressure different from atmospheric pressure.

A diaphragm is positioned in the protective zone and constantly monitors and checks this difference. As soon as anyone enters the room, the lowering of the pressure activates the diaphragm, which in turn sets off the alarm. The fan is usually operated from the normal power supply.

Then there are ultrasonic devices which give continuous warning of movement anywhere in a protected area. This equipment literally saturates a protected area from wall to wall and floor to ceiling with sound waves transmitted at a pitch above the range of human hearing. As long as everything is motionless, the pitch remains constant. But movement — no matter how silent an intruder may be — changes the pitch. On the other hand, audible sound from either inside or outside a protected room has no effect on an ultrasonic system

Disruptions of the standard pitch are sensed by contact receivers connected to a master control unit, which instantly sends an electrical signal over direct telephone line to a monitor located either in a local guard house, police station or central alarm company. The system is also used to alert guards to a power failure in any part of the system, whether it is deliberate or unintentional. The operator at the monitor can at any time flip a switch to test the entire system's working order.

Photoelectric devices are another way in which institutions protect themselves from break-in and theft. This system consists of two major parts — a projector and receiver. The projector transmits a beam of invisible electrically-modulated light across the area to a receiver. Any interruption of this light beam will trigger an alarm. Since the beam is modulated, it cannot be "jammed" with a flashlight or other light source.

Another electrical-type detection system used quite often in office buildings is the

Demonstration at the Scarborough plant of L. G. Blunt shows how hidden cameras can detect an intruder rifling files. Far right, TV monitors allow one policeman to watch two dozen locations simultaneously in Munich, Germany.

capacitance or proximity alarm. These devices are designed to protect metal containers such as safes, filing cabinets and lockers. Touching or even closely approaching the protected objects changes the electrical capacitance of the system and sets off the alarm. When properly set up, the equipment will automatically compensate for changes in temperature and midity.

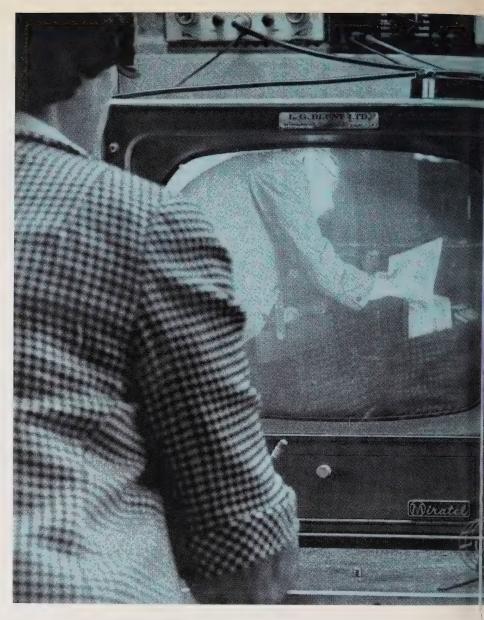
>> ese devices serve to illustrate the extent o which industry has imaginatively attacked the problem of intrusion detection. In the case of the ultrasonic system, sensitivity can be adjusted to a point where even the slightest movement of a hand or the dropping of a handkerchief will trigger the alarm.

Industry is not alone, however, in its pursuit of a suitable deterrent to crime. Builders and owners of public housing are beginning to design their structures to accommodate alarm or patrol systems.

New York City architect Samuel Paul. whose firm has designed over 50,000 multi-family units, says that owners are stressing security as a design priority. One of his current designs, a 324-unit project in Massachusetts, originally had several towers of different heights, but the owner vetoed it in favor of one building with a single main entrance and a single service entrance electrically monitored at a central location.

"This was a severe limitation on design," says Paul, "but it does permit better control and surveillance of who comes and goes in the building."

Some people believe that no precautions are too great to protect their interests and that no equipment could provide "too much" safety. Yet experts insist that a "Pentagon security" system would probably be inappropriate for a corner drugstore. How then does the average storekeeper, apartment owner or law



enforcement agency evaluate the degree of security provided by different systems?

Says security manager for the Towers department stores, Bill Lloyd: "It's a matter of trying out different approaches until you find one that works right for your particular problem."

The problem at Towers was that the "shrink factor" was rising. (Shrink factor is a euphemism which merchants use to indicate the percentage of losses they expect will occur through theft.)

Four general types of systems are available to meet the requirements of individual situations. These are usually referred to as local, direct-connect, proprietory and central station installations.

A local alarm system may be installed in a protected premises and connected to an audible sounding device on the premises. Activation of the detectors automatically

causes the audible alarm to sound uni silenced by a manually operated key control, a timing device or exhaustio the power supply.

These systems are activated and deactivated by the user, but good pract recommends that they be inspected, tained and repaired by an installing company.

The direct-connect system may be in at a protected premises and connect alarm-receiving equipment in a local police or fire department headquarter The equipment is inspected, maintain and repaired by the installing compar activated and deactivated by the user responded to by local police or the fir authority.

The proprietory system refers to a device which is installed in protected premis and connected to a central alarm-rec location within a protected installatic (constantly manned by personnel pro-



the user for his own security). This tem is generally inspected, maintained repaired by the installing company, hoperation and response by the user's sonnel.

central station system consists of allations in protected premises conted to a central station where signals received, recorded, maintained and ervised by an alarm company. Trained rators and guards are in attendance at imes.

de from the obvious advantages of m and detection systems, "security ting" also has some advantages. Flooding or surface lighting intended to provide provided to the advertising world. Instead of ng light away from buildings, it is seted at them in much the same way as oard floodlights are aimed at a sign's lace to draw attention to its message.

conly does this technique set off the enty and architectural features of a gern plant, it also dramatizes the manufiring or processing activities that take there. And while security lighting of not always call for intense amounts of the glare method works best as a see of light" for roof edges, walls, olded areas, yards, lots and storage

her institutions use floodlighting, elonics or alarm bell systems, the oem of security grows rather than mishes on the North American condit. Neither is it only the professional who is a challenge to security system is ners. "It's the ordinary person who is shopping — not even with the intendration of shoplifting — and commits the fee who is the real problem," says

ncer offender is the staff employee. A tinal merchandiser once remarked:

"If we could cut down on staff shrinkage, we could let the customers who steal go free!"

It seems that man's ingenuity to break the law rises in somewhat direct proportion to attempts to circumscribe lawbreaking. Theft deterrents, while in most cases effective, sometimes challenge the offender to merely divert his techniques. This may have been the case with North York Board of Education.

They found that after-school and evening break-ins and thefts declined radically after the installation of an electric security system. But then they discovered a new problem. Daytime thefts during school hours began to increase!

a different approach

The average person's idea about a security system is an alarm bell ringing wildly in a factory or large department store. This kind of alert system protects the plant or store from theft and is aimed primarily at apprehending a thief.

Ontario Hydro's approach to security differs from this popular conception. It is directed more toward the deterrence of theft than the apprehension of offenders.

Hydro's approach to security is twofold. One is to protect the plant and the public; the other to ensure uninterrupted supply of services. Both are considered as being integral parts of an over-all protection system.

Director of Security Ted Atherton, who is responsible for the physical security of Hydro's 900 installations throughout the province, is a keen advocate of electronic aids where increased efficiency will result. The use of closed-circuit television to remotely control access to buildings and installations is a typical example. Hydro also uses various types of motion detectors and an identification card system that can

be used with a TV camera to allow security men to check visitors from a central location.

The employment of Hydro's vast radio network, consisting of base stations, two-way mobile communications and walkie-talkies is an important aspect of the security function.

In addition to its own devices and purchased equipment, Hydro also uses the services of commercial protection systems.

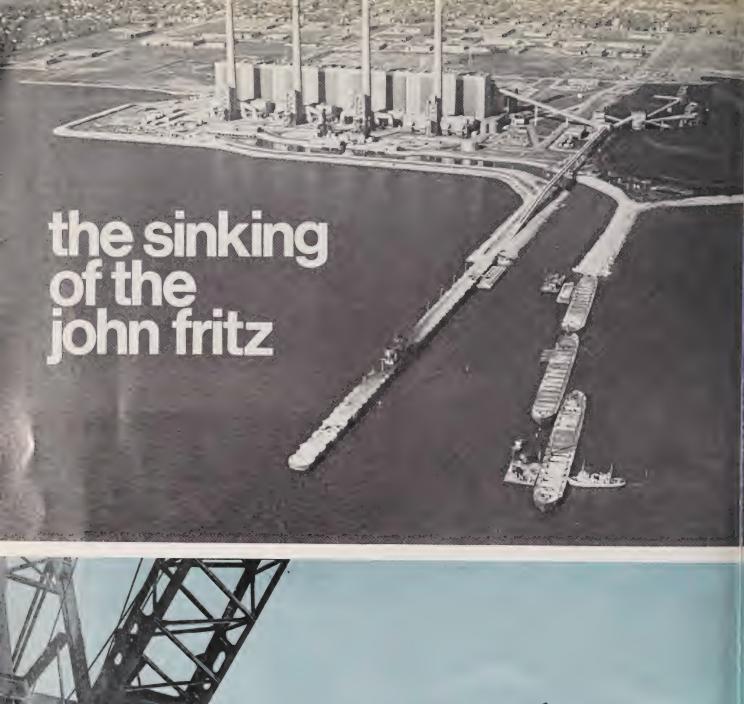
But the prevention of injury to curious onlookers is one of the Security Division's biggest headaches. "It shouldn't be," says Mr. Atherton, "but voltage doesn't seem to deter people."

One of the favorite targets for theft is Hydro's thousands of miles of copper wire, even that used to carry high voltage power from generating stations.

To determine if they are "safe" to climb, a potential thief will throw a coil of rope, with a short length of wire attached, over the lines. If the wire doesn't go up in a shower of sparks, he thinks it's fair game to cut the cable. Constant surveillance of the lines tends to keep this sort of activity at a minimum.

Another favorite pastime of some bored teenagers and hunters is shooting at high-voltage insulators. This is one of Hydro's biggest problems.

Yet another is the stealing of electricity. This crime is committed by tapping into the line ahead of the meter, or hooking into the power cables in isolated areas. Although the fact is not widely known, Canada's Criminal Code specifically prohibits the unauthorized use of electric power. The prevention or detection of this illegal and highly dangerous operation is the partial responsibility of the security organization along with other Hydro departments.









rstructure was torn from the John Fritz paration for the boat being manoeuvred position and scuttled. Rock was ned in the lake and later piled in the . Top right shows John Fritz in better under tow by small tug.

his sunny and calm, not at all the day shipwreck, when the good ship John settled her 450-foot bulk firmly on eed of Lake Ontario without so much gurgle.

vs hardly the valiant end to a glorious Fr. She took about three hours to go In and even then a good portion of mained ignominiously above water. hin and crew had long since deserted ecks. For six years she'd been used re grain. Now, in her latest and ole as a breakwater, she would end lys wearing a cement overcoat.

ore than half a century, the John lied the Great Lakes with iron ore and grain. But, faithful as she was, ever became a real boat. She was 3 to move under her own steam and

had to be towed wherever she went. There was a small engine on board, used only to operate the winches.

The John Fritz was scuttled, along with two similar barges, to form a 1,200-foot breakwater off the Lakeview power station, west of Toronto. The breakwater is designed to stem a flow of ice which last year partly blocked the station's cooling water intakes and caused several shutdowns.

"It was the cheapest and quickest solution to an urgent problem," says engineer Bob Paul. "The idea isn't new. It was employed on occasion in the last war when old boats were sunk to create harbors on open beaches. We also discovered that a cement company at Charlevoix, Michigan, had done something similar and managed to get an opportunity to inspect their installation."

All three vessels were filled with stone and moved into position by tug and derrick barge. They were sunk stern-first by opening the rear ballast tanks. The prows were then manoeuvred into place and

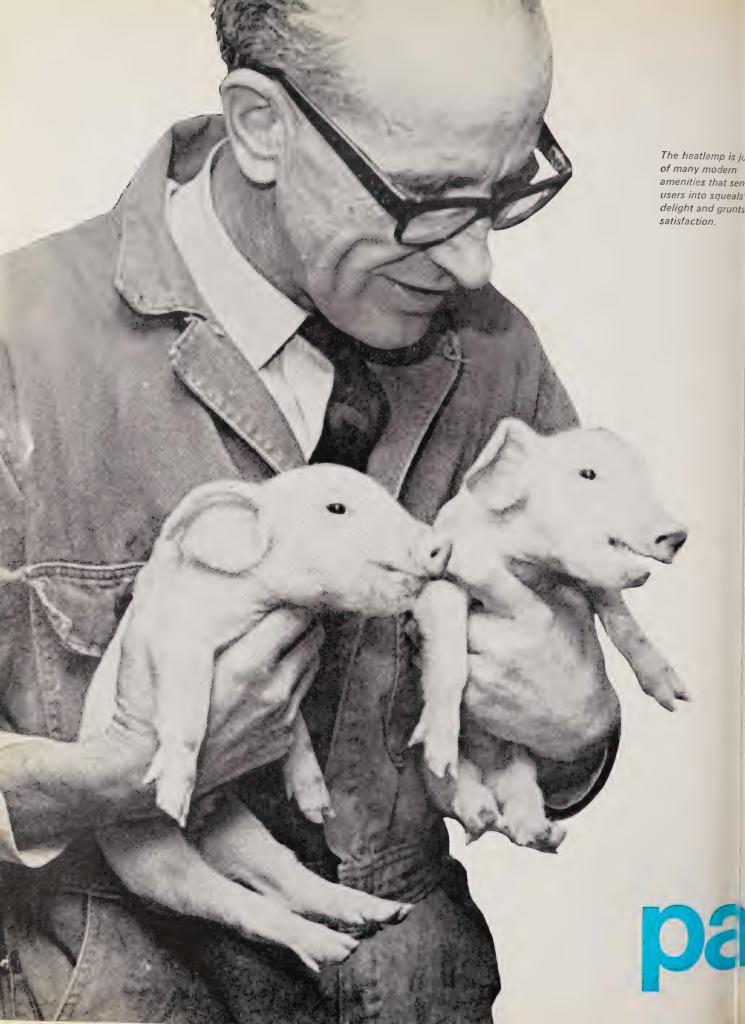
the remaining ballast tanks flooded. The boats rest in a channel dredged in the lake floor last summer.

For one man at least, the sinking of the barges brings back mixed memories. He's Captain Stan Tischart, who for many years commanded the Upper Lakes Shipping vessel Douglass Houghton, which took the boats in tow.

"The main advantage was their economy." he recalls. "They could take on more cargo than the parent vessel and we could speed unloading by mooring the barge and tow boat at different docks.

They were eventually abandoned because they were slow. We could only make about 10 miles an hour compared with today's boats, which do 15 or 18 miles an hour. This meant we were obstructing traffic in narrow channels such as in the Detroit River."

Does he feel any nostalgia at their undignified demise? "Not really. You wouldn't take them out in a storm although they handled quite well in rough weather. They were a nuisance, though."



lectricity helps keep porky in the pink and the farmer out of the red

y Don Wright

eputations are hard to live down and ere is every reason to believe that a pig any other name would smell a whole

nce regarded as indispensable on every mily farm, and prized as a mortgage lifter, e pig was relegated to the bottom rung the barnyard social ladder for the versaty of his appetite and his love of a mud le on hot days. Though home grown ain and skim-milk constituted his main et, he also disposed of kitchen scraps and getable waste with equal finesse. But the is really a superior character.

's gregarious, scrupulously clean, and criminating at the dinner table when he s the chance. He's also courageous, ectionate, tough, adaptable, efficient, olific – and on his way to a much higher el of public esteem.

tthat the pig has turned to PR for a new ige. It's just that he's getting a better

years the pig was looked upon by usands of small farmers as a ready rce of extra money – a good way to vert cheap feed into cash. Salted down, was a staple of the farm diet throughout long months of winter. And soap cers were willing to pay good money his lard in the days before detergents.

the pig came under closer scientific tiny in the drive for greater farm efficy after the second world war. Loss of ort markets added stimulus to the search mprovement.

gs came to a head in 1948 when adian pork was virtually banished from ish breakfast and dinner tables by mark. Economics and quality control tits downfall and the loss of this et, which once accounted for 66 per of Canadian pork production, turned ig producers' attention to the home et. Canadians wanted more lean in meats and the pig went along with

tast couple of decades, Canadian pigs

and now provide the equivalent of an extra couple of hams in red meat. As one breeder puts it: "The aim is to get more meat in the right places. It's the presence of meat, not just the absence of fat, that we're after.'

Today's pig is also much more efficient in the important area of food conversion. Where it once required well over four pounds of feed to produce a pound of pig, less than three pounds are now required and further improvement is anticipated. This is approaching the fantastic efficiency of the chicken broiler where the ratio is

A number of factors account for the vastly improved performance of the Canadian porker including breeding, feeding, testing, disease and environment control.

One area where the pig enjoys a big advantage over his owner is in the matter of ancestors. Selective breeding is partly responsible for the new look in pigs.

An off-shoot of the pork trade with Britain was the early influence of English breeds and in the early 1920s, the Yorkshire was adopted as the national breed for Canada in a "one-breed" policy along the lines of the very successful Danish approach. But genetics only came into its own in the postwar years in the drive for improved litter size, rate of gain, feed efficiency and meat yield.

This called for new breeds and in the last dozen years the Canadian Yorkshire has declined from its overwhelming 85 per cent of registered breeding stock to 69 per cent. Number two pig on the Canadian scene is the Landrace. He's of Scandinavian origin and, together with the Lacombe developed by the federal Department of Agriculture, and a smattering of American breeds, provides enough variation for the hybrid vigor essential to a sound breeding program.

It's scarcely revolutionary to suggest that diet affects growth but the real impact of rations on pig performance has not always



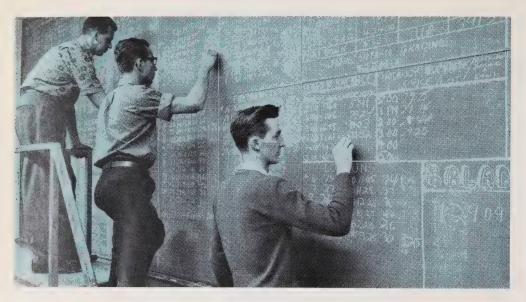
been fully appreciated. In Ontario, at least, where almost 3,000,000 hogs were marketed in 1967 (36% of the Canadian total) the shift is to high energy rations namely corn. This is usually fed in the form of pellets rather than mash and it's getting

Since replacing all of the wheat and part of the barley in the former diet with corn, and introducing antibiotics into the rations, the test station maintained by the federal government at Waterloo has led all Canadian provinces in its feed conversion performance. Effective in October, 1966, the switch to corn has also lopped about 15 days off the time required to raise a 200-pound pig for market.

This happy pig-corn relationship is particularly promising in Ontario where more and more acreage is being planted to corn. And it's a natural combination in that liquid manure from the hog operation can be returned to the land as fertilizer to grow more corn.

Over the years, the Canadian testing and grading programs have done a great deal to improve the quality of hogs raised for market. Harvey Cochran, district super-

npered piggies



vi. or with the Canada Department of Agriculture, in Toronto, explains that the test stations maintained in each province are basically a means of keeping tabs on breeding records.

Under the ROP (record of performance) program, breeders meeting certain specifications will sell four of a litter to the government. The pigs will be raised to 200 pounds and slaughtered for market but not before such vital statistics as rateof-gain, feed conversion and carcass score have been recorded for posterity. These figures are sent to Ottawa and distributed to breeders and producers across the country as an aid in selecting their stock. "It's been very successful," Mr. Cochran observes, "but there is a feeling now that we've reached a plateau and results have levelled off. We're coming up with a new program very shortly that gets away from litter testing and concentrates on the boar. It has to do with performance and progeny and we believe it will help the industry reach even higher levels of proficiency."

Canadian regulations stipulate that every hog raised for market must be graded and there has been a steady improvement in the percentage attaining the A and B, low-fat categories. This means better prices, of course, and as an added incentive, the federal government pays the producers a \$2 bonus for every Grade A hog sent to market.

Per capita consumption of pork meats remains fairly constant in Ontario and hog industry growth pretty well reflects popula-

tion increase since it's essentially a home market. An exception is the small (50 million pound) market Ontario has built for hams and back bacon in New England and the Atlantic States. This is partly offset by imports of breakfast (fat) becon from the US. As Mr. Cochran points out, "Canadians eat a terrific amount of bacon."

In comparing the US and Canadian pork industries, he says ours produces a somewhat higher quality of pork, raises slightly larger litters and enjoys a superior grading system. It also enjoys a \$1-per-hog advantage over the Americans in the matter of inoculations for hog cholera. Inoculations are unnecessary in Canada as so far this scourge has been confined below the border.

This is not to suggest that Canadian pigs are some kind of super swine. Disease continues to be a problem and control measures a priority item among researchers and producers.

One approach is the SPF (Specific Pathogen Free) program developed by, among others, the Connaught Medical Research Laboratories of Toronto and faithfully followed by some of the country's leading breeders. Aimed primarily at isolating pigs from their two most feared diseases, virus pneumonia and atrophic rhinitis, SPF leaves no room for half-way measures.

In fact, human visitors are required to shower and change clothes before entering

SPF barns for fear of polluting the stern atmosphere. Science governs every as of SPF hogs beginning long before the are born and the rules cover every phase from breeding, housing, feeding and cliness to shipment in disinfected transtrucks used exclusively for SPF hogs benefits of this rigid regime include in proved quality and performance.

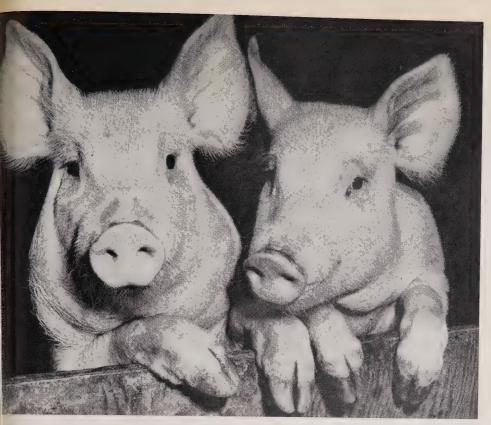
Another program designed to control two diseases is supervised by the Vet nary Services Branch of the Ontario Department of Agriculture and Food. Herds enrolled in it represent the only source of pigs officially recognized as being free of atrophic rhinitis and virupneumonia. Recognition is based on regular post-mortem examinations of and lungs conducted at the Ontario Veterinary College.

Physical environment is the other factor greatly influencing performance and profitability and the modern hog barn far cry from the make-shift pigsty of y year. It's likely to be a single-storey, vinsulated building clad in aluminum of and capable of housing anywhere fro 100 to 1,000 pigs.

Even the flies are a thing of the past, in the most advanced operations, a fa could leave his pigs for a week and kr they would remain clean, well fed, w and warm. Electrically timed feeders measure out the ration of pre-mixed f at prescribed intervals, thermostats c the temperature and manure can be gathered automatically.

The trend to larger and more efficient operations, which prevails throughous aspects of agriculture, is easy to determ the hog industry. The number of comercial hog farms in Ontario fell from 93,000 in 1951 to 42,000 in 1966. Do the same period, the number of farm 62 or fewer pigs declined 63.2 per cerwhile those with more increased 163 per cent.

Many pigs raised today never see su Controlled environment is the "in" thand electricity is behind it. It's a comition of heating and ventilation calculate achieve optimum health and perforance. Some new buildings use cooline equipment in conjunction with ventilate control summer heat. Pigs do best



rees and there is a fall-off in the rate of at temperatures above and below median.

the build-up is prevented in warm ther with a carefully engineered system and air intakes while electric cable ed in concrete floors is a popular shod of maintaining warmth in winter. The lamps are often used to provide blementary heat during the critical awing period.

ro have contributed substantially to have contributed substantially to difficiency of hog production in the hince by providing expert advice in the res relating to physical environment. Work of Ross Milne, farm sales officer, Irticularly well regarded by authorities levels of the industry.

sil very scientific and likely to become a so. Robert Forshaw, assistant prostrin the Department of Animal Science in University of Guelph, points to a sper of areas where important work is carried out. These include carcass inosition, energy utilization, cross in artificial insemination and consolid breeding. The latter involves incling heat periods in sows with the eff hormones. Its aim is to enable seers to time farrowing and streamline of ction by putting through several at the same level of development.

Artificial insemination has not been as widely accepted with swine as it has with dairy cattle and it's a field now being thoroughly investigated among researchers in several countries. It would make possible further improvements in efficiency.

Hogs represent 17.5 per cent of all farm income derived from the sale of livestock and its products in Ontario, Mr. Forshaw points out, and 66 per cent of all farm income is from livestock. This compares with 50 per cent for Alberta and 24 per cent for Saskatchewan.

"We are an important livestock province," Mr. Forshaw likes to make clear, "and swine production is an important segment of it. It's an exciting and meaningful industry."

electronic marketing

Whether or not they appreciate it, Ontario hogs enjoy what is considered by many to be the most successful marketing system of any agricultural product in the world.

Last year, the Ontario Hog Producers Marketing Board did \$136,000,000 worth of business in handling more than 90 per cent of all hogs sent to market in the province. Visitors from dozens of countries drop in to see how as many as 30,000 hogs a day can be sold on an equitable and competitive basis fair to producer and processor alike. It's a kind of electronic auction where the participants remain incognito.

Marketing or assembly yards are maintained at 48 locations across the province and in Montreal. These are connected by teletype or telephone with marketing board headquarters in Toronto. When a lot of hogs at any one yard is ready to move, the information is sent to Toronto.

If the market looks favorable, the offering is placed on a unique master tele-type machine linking headquarters with all 14 major packing houses in the province and one in Hull, Quebec. A price tape, prepunched on a declining scale in drops of five cents, is fed into the master and the fun begins.

The prices appear simultaneously on a "buying machine" at each processing plant and when the price is right for a particular buyer, he has only to press his buying button and the hogs are his. Several potential buyers may hit the button at approximately the same time but the machine is capable of separating the bids by one-thousandth of a second.

None of the other processors know who purchased the hogs so that each transaction is a private matter between the marketing board and the buyer, and no single plant can have a significant influence on the market. In fact, the board operates a buying machine of its own under exactly the same conditions to purchase hogs for smaller processors not on the master circuit.

All sales are based on grade A hogs, FOB the market yard, and adjustments are made according to the grade actually delivered. Prices per hundredweight might vary in a 50c. range or more in one day and by more than \$10 in the course of a year.

Owned on a co-operative basis by the hog producers of the province, the tele-type selling system is financed by a charge against buyers based on the number of hogs purchased through its facilities. All in all, it's a go-go kind of a market for Ontario's swinging swine.

Commissioners talk business at Belle River and Parkhill

the omea goes west

togetherness pays off

More than 100 delegates gathered at Belle River for the last of the OMEA district meetings in 1968. Subjects at the District 8 meeting ran the gamut from co-operative marketing to labor relations.

Al Steels, sales and service supervisor for Ontario Hydro's Essex area, spoke about COMPEC, the co-operative marketing plan for Essex County.

The first major co-operative sales plan of its kind in the province, COMPEC involves 32,500 customers with almost half of them located in 12 municipalities. The remainder are served from Ontario Hydro's Essex area office. Windsor, the largest city in the county, is not included.

Mr. Steels told delegates that the plan was originally conceived by his predecessor, Tom Armstrong, who at the time was consumer service supervisor for Essex County. "He could see sales opportunities slipping through our fingers by the hundreds simply because of the lack of salesmen to follow through, especially in the municipalities."

Leamington PUC then asked Ontario Hydro's Western Region to study the possibility of increasing its sales staff to cover both municipal and rural customers. The

study showed that if the utilities were willing to pay Hydro \$2 a customer per year, all salaries and expenses, direct and some indirect overheads would be recovered.

All that remained was a formal agreement. This was drawn up and signed to come into effect on July 1, 1967. And COMPEC never looked back.

The original sales and office force had doubled to four outside and two inside personnel, and an advisory committee of three utility and three Ontario Hydro men had tackled numerous problems. It had first set its sights on water heating.

"The conglomeration of local water heating policies that existed in Essex County was unbelievable," said Mr. Steels.

All these were swept away in favor of one comprehensive marketing plan covering the whole county. Two units, the 60-gallon Cascade and the Cascade 40 water heater – with the emphasis on the Cascade – were retained. There's a trade price for each, a retail and an installed price, a rental charge and a uniform time-payment charge including maintenance. COMPEC members are stressing the time-payment feature.

Indicating the success of the water heater promotion, Mr. Steels said that in the first nine months of this year, 893 electric water heaters had been installed in COMPEC territory.

Turning to the electric heating field, Mr. Steels said that it carried the same problems – a multitude of incentives in various municipalities. These were done away with in favor of just one thing – free underground service.

In other areas, said Mr. Steels, the utilities were all in the Electrical Modernization plan and all had accepted a realty company's second mortgage plan. All 12 were

gradually adopting the current remended residential rate package an general rate for commercial and indicustomers.

The target set for 1968 in the all-el penetration of the new housing marke 40 per cent. As of October 1, COMPEcome within .6 per cent of that.

Mr. Steels told delegates that similar operative marketing plans for Lambto the east section of Elgin county were on the way to fruition. He also unvenew symbol for the plan — a lightning zipping through the COMPEC name

Four resolutions were passed for sideration of the provincial body.

The first came from Windsor Ut Commission. It asked that a uniform cedure and formula be established for recovery of expenses where one goes to the aid of another in an emerg. The formula would include going rates in accordance with the working a ment of the utility providing the aid, a as such items as fringe benefits, be charges, truck hours, travelling expenditure aid.

Resolution 2 was from Amhers PUC and asked that the annual O AMEU meeting date be moved near middle of March. The resolution sthat the present dates – either the last of February or the first in March – difficulties for many members dumonth-end reports that have to be many manual manual manual manual members.

Ron Mathieson, AMEU manager-stary, told the meeting that it was possible to move the date to the mid. March. In earlier years, he said, it has flicted with another convention a Royal York Hotel in Toronto. Howe



New officials of District 8 OMEA are (seated) L. F. Ounsworth, Harrow, 1st vice-president; H. G. Morrison, Chatham, president; J. T. Barnes, Sarnia, past president. Standing: C. L. Leach; Chatham, secretary-treasurer; J. R. Philips, Brockville, hon. vice-president; B. R. Roy, Windsor; J. G. Young, Tilbury, 2nd vice-president; G. H. Bain, Petrolia.



OMEA president J. R. Philips, left, presents a 15-year se award to Reeve John George, of Belle River.

ould take two or three years to change date.

The third resolution, also from Amherstrg PUC, was directed at Ontario Hydro.
asked that the commission take action to
be secondary financing to an individual
me owner, either through the EM plan
another source. Reasons given for the
quest were that both the municipal utilis and Ontario Hydro are losing prospecbe customers for residential heating to
mpetitors who have money for secdary financing.

Sarnia Hydro sponsored the final resolun, which dealt with the recently released
nd report on labor-management disres. The resolution asked that a comtee, made up of OMEA, AMEU and
tario Hydro personnel, be set up to
dy the Rand recommendations and ret on them. When completed, the report
uld be turned back to the three bodies
appropriate action.

mmissioners told steer ar of bargaining

ending upon the direction from which shill is approached, the population is er 1,100 or 1,150. The signs at either of town don't agree. But for one day ntly it was either 1,177 or 1,227 as 77 gates arrived from both directions for annual fall conference of District 7, EA.

nong the subjects under discussion labor negotiations and pensions. Barley, personnel director for the city that. Catharines, gave delegates an inside at labor while A. W. Reeve, secretary-

treasurer of the Ontario Municipal Employees Retirement System (OMERS) talked about pensions.

Referring to the Rand Report on labor relations, Mr. Barley said that commissioners, or the OMEA as a body, should make their views on its recommendations known to the Minister of Labor before the government takes action.

He also warned local commissions to be prepared for regional bargaining. He pointed to the Okanagan Valley in British Columbia where bargaining to cover 600 employees in 13 municipalities is going on. All 600 are represented by the Canadian Union of Public Employees.

Mr. Barley said the trend toward regional government in Ontario could only give impetus to the idea of regional bargaining on the part of the unions.

The personnel director told delegates that a contract is really the culmination of management-union dealings over a period of time. "A company gets the union it deserves," he said, and added that minimum pay drew only minimum workers.

Too often, he said, management was too concerned about the money aspects in a contract. In such cases it tended to overlook other areas, agreeing to clauses which had a profound effect on management authority, limiting the way a company could operate.

Mr. Barley also warned against small idealistic clauses using as an example the granting of a 50-cent shift differential that, at the time, affected only one worker. Not only could this hinder future operations when many more people might be required to work on shifts but it also might affect the negotiations of a neighboring utility that already had many shift workers.

Once given, a concession was usually

never withdrawn – both union and management had to live with it.

He cautioned commissioners against thinking of "the union". They should think rather of the union as being a group of people.

When a contract was signed, he said, there was no winner and loser. If it was a good contract, it represented a coming together of the two parties with the terms being mutually agreeable.

Although there was no hard and fast rule about keeping elected officials away from the bargaining table, Mr. Barley said that as long as they were fully informed and supported their negotiators, there shouldn't be any need for them at the table. It was easy for an experienced union representative to draw in an elected official with an apparently innocent question. "Then, in effect, management begins speaking in two voices, something the union never does," he added.

Turning to pensions, the group was told by Mr. Reeve that the membership of OMERS had risen to more than 50,000 from 8,000 at its inception in 1962.

Mr. Reeve traced the history of the pension system, pointing out that contributions had been adjusted for the Canada Pension Plan and that a supplementary scheme was recently added on a voluntary basis.

Normal retirement under OMERS was at age 65, but employees could work beyond this and still continue to contribute. He also said that early retirements at 55 and 60 were a part of the plan, but meant payments of 50 and 65 per cent of the full pension.



ng District 7 OMEA for the coming year are (seated) L. W. Smith, Tillsonburg, past et ent; J. R. Philips, Brockville, hon. vice-president; E. W. Curtis, London, president; Lang, St. Thomas; Wyn Gifford, Aylmer. Standing: R. Austin, Arkona; F. T. Julian, stock; A. L. Furanna, London, secretary-treasurer; R. G. Campbell, Embro, vice-es ent; P. R. Locke, St. Thomas, hon. vice-president.



Lawrence Box, chairman of Parkhill PUC, left, receives a tie clip and cuff link set for his 25 years' service as a utility commissioner from J. R. Philips.

by Ted Johnston

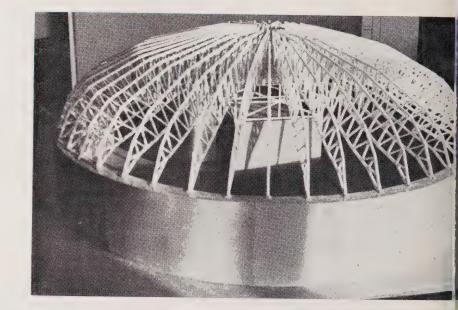


Dad often gets as much kick out of the playthings he buys junior each year as the kid himself. But who'd guess that responsible engineers also play with toys — and g a paid for it?

Lilliputian replicas of all kinds are used extensively by Ontario Hydro to inform, solve problems, and explain and sell new ideas. Termed "design insurance," the use of models prevents costly errors, reveals money-saving shortcuts, assures that designs work and often promotes smoother working relationships by demonstrating new or unorthodox procedures to the hard-to-convince.

Sooner or later everyone involved in the use of models at Hydro has to put up with the quip — "you get paid for that?" They do. And the commission is also well compensated for the time its engineers spend playing with "toys".

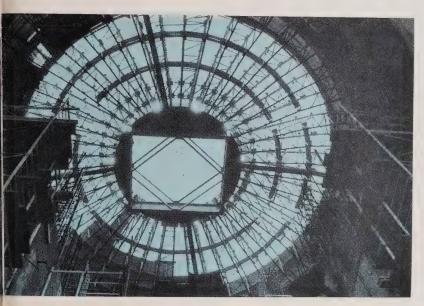
During construction of the St. Lawrence Seaway and the associated power development, Hydro built detailed working models of a 35-mile section of the river. It saved \$10 million by reducing construction costs and showing how additional kilowatts could be generated. A few years earlier, a model of the Niagara River saved similar amounts on the Sir Adam Beck No. 2 power station and on work done to preserve the beauty of the falls. In fact, hydraulic







Models used during the planning of Pickering nuclear station, and the actual thing. Photos show reactor end shield, reactor building roof and the station's vacuum building.





models have proven the feasibility of most generating stations since Hydro's formation in 1906.

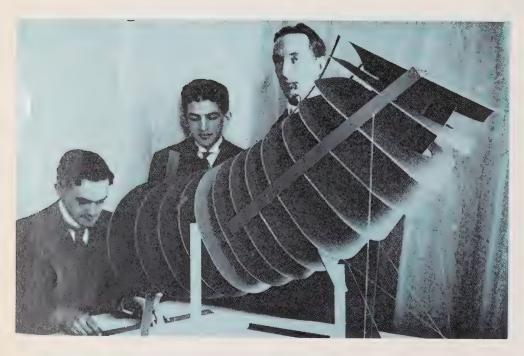
But to be useful, models needn't be king-sized or highly sophisticated. On occasions all that's needed are a few bits of wood, some cardboard and plastic. An inexpensive three-dimensional cardboard model served to verify, conclusively, drawings and calculations for the placement of giant tower cranes at the Pickering nuclear power station, just east of Metro Toronto. While the cranes service every part of the site there must be no chance of their booms colliding, either during operation or when the cranes are idle (to prevent wind damage, the booms are allowed to weathercock when not in use).

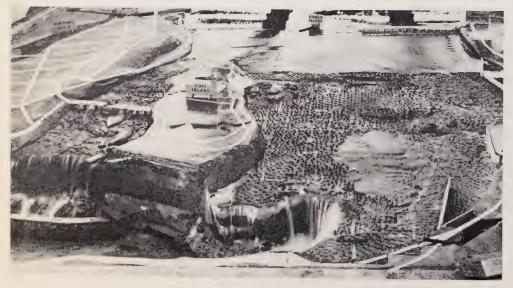
Throughout construction, models have been used extensively at Pickering. Handling procedures for heavy reactor components were checked and demonstrated in miniature. An eight-inch wooden disk representing a 245-ton end shield was used to explore alternative transportation methods and routes available to move it from a delivering barge on Lake Ontario to the reactor building, 1,500 feet away.

The circular reactor buildings themselves pose many problems of access for components like long lengths of irregularly shaped feeder piping. With items like these, calculated answers are just out of the question. A plywood model of the fuelling machine vault and wire bent to the shape

Stress on plastic hook shows up in fringed patterns when viewed by polarized light. The technique, called photo-elastic stress analysis, is used on models to determine loads on full-scale structures. Also shown is a detailed model of the Niagara River and Falls and a model built by engineers in 1905 during design of the Ontario Power generating station at Niagara Falls.







of the feeder pipes saved the day. This same model showed that a section of internal wall in the building should be out until a large column for a fuelling machine was installed.

An interlocking model of the massive turbine block was built to help to exp the complicated construction proceds. An interlocking model of the reactor was also made.

The station's vacuum building — a sor huge safety valve — was an enigma to everyone until a three-foot model of t multi-columned structure was put tog

Sometimes full-sized mock-ups are us to further verify models. The method of erecting the formwork for the domed concrete roofs of the station's four reabuildings was established this way.

Pickering is only one of seven major processes and a seven

A well-engineered structure is econc in its use of materials yet still strong en to do the job. In a simple structure, stresses can be calculated. But as des become more complex this method is completely satisfactory.

Again, models come to the rescue of tengineers. The technique is called phelastic stress analysis. A transparent preplica of the structure is subjected to loads representing those that the full-sized counterpart is designed to carry When the model is viewed by polarize light, the exact location, direction and of stresses are indicated by a series of fringed patterns. From these, the strest the full-scale structure can be calculated.

A variation of this technique, which is volves coating parts to be tested with plastic, allows actual components to checked in the same way. Reactor partydro's first nuclear station were testables manner.

If drawings and blueprints are sometic difficult for the experienced to interpripity the poor layman. This is why determined the properties of the control of the properties of the public how a planned postation or other installation will look.

And, of course, charming models of the female variety are sometimes employed conjunction with these displays to make Hydro's story even more palatable.



ghty mouse

ns such as flux tilts and xenon oscillations are daily tossed ind the \$85 million nuclear power station at Douglas Point, for all the computers and other gadgetry, a recent problem his forerunner of Ontario's nuclear might was solved by a se.

that crossed a road at the site. Engineers were stumped in a wire "fish" used to string the cable snagged on projectinside the conduit. Someone had the original notion of thing string to a frog in the belief he would hop through. But preature declined even when another frog, hopefully of the liste sex, was stationed alluringly at the far end.

nally, to the rescue came Supermouse. With the string tied around his tail, he zoomed through without so much as a e. It was then a simple matter to attach the string to the cable bull it through.

d Supermouse? "For a while we thought of training him," one of the engineers. "But after all he'd been through, we get him go."

e step closer

io Hydro has awarded a contract valued at \$1.8 million for ruction of the tailrace channel at the 203,300-kilowatt Wells ating station, on the Mississagi River near Thessalon.

ws of Clarkson Construction Company Ltd., Oakville, will we nearly 2¼ million tons of earth and rock to carve out a nile channel to return water to the river from the power-

long tailrace, which will reach a depth of 65 feet, makes /ells plant unique. The plant is under construction next to visting George W. Rayner station. Both plants will share ame headpond, with separate headworks located about set apart.

\$24.3 million, two-unit station is scheduled for completion

ntion squeeze

to Hydro Chairman George Gathercole announced last that Hydro had been forced to increase wholesale power to the municipal electrical utilities.

h increase varies slightly from one municipality to another bal technical reasons, but the average across Ontario is from the increase is effective January 1.

te increase was forecast by Mr. Gathercole at the annual

meeting of the OMEA in Toronto last March and repeated at the regional OMEA fall meetings.

"The increase in wholesale rates will not automatically raise rates to municipal utility customers," he said. "Some utilities will be able to absorb the adjustment under their existing rate structures. Others will be obliged to pass it on."

Rates were recently increased for two other types of customer served directly by Ontario Hydro – retail customers in rural areas and industrial consumers.

"The commission is naturally concerned at the rise in costs," Mr. Gathercole added, "and is doing everything it can to achieve economies and improve productivity. But present trends are of such dimensions that they cannot be absorbed by these processes.

"Despite a relentless effort to cope with advancing prices for equipment, supplies and property and salaries and wages, costs have moved irresistibly upward. Higher interest rates on borrowed capital, nearly double those of a dozen years ago, have been another inflationary factor.

"Despite this necessary adjustment in rates, consumers in Ontario continue to benefit from rates that are among the lowest in Canada."

Star struck

Hamilton Hydro's Bob Vivian is earning himself quite a reputation for improvisation. For some time, he's been making bird feeders out of old street light reflectors and broom handles. Now the utility's practical minded sales promotion manager has converted the Centennial symbol that last year shone outside the Hydro offices into a Christmas star.

It was basically a matter of removing the lamp sockets forming the years "1867–1967" and using them to add another point to the flat-based symbol. Actually, his idea is the exact reverse of someone's in Toronto Hydro, who juggled the Christmas, 1966, decorations to create a Centennial display.

New regional manager







Kenneth N. Bodkin

Kenneth N. Bodkin has been appointed manager of Ontario Hydro's Northwestern Region. He will succeed J. Walter Looney, who is retiring on February 1 after 38 years' service.

Born in Delaware, Mr. Bodkin was educated both there and in London before he joined Hydro in 1933 as a lineman. He resumed his education at Queen's University, continuing as a lineman during summer vacations, and graduated with a B.Sc. in electrical engineering in 1939. The following year he was appointed area manager at Lucan.

After four years of military service, he was discharged with the rank of lieutenant and returned to Hydro's Head Office as assistant municipal engineer. In 1948, Mr. Bodkin was named North-

western Region consumer service superintendent and for 12 years has been the region's consumer service and sales engineer.

Mr. Looney began his Hydro career in 1930 after graduation in electrical engineering from the University of Toronto. His first position was meter engineer in the Thunder Bay system, Northwestern Region.

Later, he served as district superintendent in St. Joseph and Patricia districts, and as superintendent of Chats Falls and Cameron Falls generating stations as well as the Thunder Bay system. In 1948, Mr. Looney was named operations engineer for Northwestern Region. He became regional manager in May, 1967.

Facts and figures



TV dinner?

In 33 years with Thorold PUC, Bill Boyle had but one job. That was writing down what was said and keeping a close eye on the commission's purse strings – in other words, he was the secretary-treasurer.

To honor his long service, 30 members of the PUC staff and the commission held a buffet dinner for Mr. Boyle, who was presented with a TV set. Mr. Boyle was born in Belleville and worked in banking before joining the utility. Pictured after the presentation are: Commissioner J. W. Irwin, Chairman J. A. Miller, Mr. Boyle, Mayor C. E. Grose and Manager H. A. Howard.

municipal briefs

Modern street lighting for modern communities is the by-word in the Town of Mississauga. Bert Fleming, manager of Hydro Mississauga, developed the new light standard in co-operation with Power Lite Devices, Ltd. The light will go up in newer subdivisions.

Half a century of service to the community didn't go unnoticed in Hanover. In celebrating its own birthday, the local PUC held a two-day educational seminar for employees, the highlight of which was a luncheon. Ontario Hydro Chairman George Gathercole was the guest speaker.

A former commissioner who served 14 years on Leamington PUC has returned to the commission. J. Lawrence Graham was appointed to fill the unexpired term of the late Arthur R. Cullen.

The new commissioner will serve until the end of 1969. Fifth last December in a six-way race for four seats.

St. Thomas PUC veterans F. T. Ford, assistant general mar and A. G. Littlejohn, waterworks superintendent, were the g of honor at an informal dinner marking their retirement.

Two new appointments have been announced by St. Th PUC. Lorne D. MacVicar has moved to the post of superinter with responsibility for both electricity and water supply. Ja Rupple was named technical co-ordinator. Mr. MacVic 31-year PUC veteran, has been hydro superintendent since Mr. Rupple joined the utility in 1960 after a career with Ontario Department of Highways as a surveyor.

Brampton town council has agreed to apply to the Or Municipal Board for approval to issue debentures tot \$186,000 for Brampton Hydro – but with a condition. The mission must submit a full report on its financial policies capital standing to the town. The funds will be used to fir electrical installations at Peel Village Shopper's World. Apply of Ontario Hydro must also be secured before the debenture be issued.

Georgetown Hydro has appointed Hugh D. Campbell to the of assistant manager. Mr. Campbell moved from Richmon Hydro where he has headed the line crew for six years.

Strathroy PUC was a bit red-faced recently. It had a fire in, places, the utility's new water tower. Sparks from a we torch set insulation at the base of the empty tower smould and smoke poured from the top of the structure. Workmen extinguishers subdued the blaze before the fire depart arrived.

One Oakville subdivision will increase the number of electine heated dwellings in the municipality by about 50 per centrum PUC says that 158 all-electric homes planned for Oaklinks division will provide the big jump.

Jerry Walsh, who retired in April after 23 years as manage Niagara-on-the-Lake Hydro, died in October. Mr. Walsh joined the commission in 1925. He was appointed magnitude after military service in World War II. Mr. Walsh took an interest in community affairs and served for 11 years on the board of education.

Ridgetown PUC has taken up residence in the new Fe Building, but it may not be for long. The commission had to its administrative offices when a lease on the former bu expired. PUC chairman J. J. Field says the utility is looking larger location where all operations can be consolidated.

A. Wilfred (Bill) Binns, a member of Dunnville PUC, died rec He was first elected to the utility 15 years ago and serv chairman several times. A local food merchant, Mr. Binns rearly this year because of poor health. He had service in Royal Canadian Air Force in World War II.

Newmarket Hydro has a new office manager. He's W Musson, no stranger to the electrical utility business h worked at Bradford PUC in the same capacity for four yea Everything is back to normal in Orillia after a 67-day str workers at the Orillia Water, Light and Power Commi Union members voted 39 to six in favor of the three-year cor Electrical employees received a 31 per cent wage increase, will give linemen a rate of \$3.82 an hour by September, Waterworks employees received a 27 per cent increase ov three years.

Galt PUC is taking a close look at its role in a major road extended program that will speed traffic flow in the city's eastern ind the basin. The project involves the relocation of power line water mains.

Vandals and decorative park lighting just don't mix. (lighting standards in Guelph's downtown Centennial Pahave been extensively damaged. Long delivery period replacement parts have hampered repairs.

at on the back

tario Hydro has received a pat on the back from the Ontario deration of Anglers and Hunters regarding its housekeeping at recently opened Mountain Chute hydro-electric station.

dederation president R. D. Longmore, who toured the site, in a letter to Hydro Chairman George Gathercole: "The most pressive part of the whole project was the excellent condition the flood water behind the dam. Certainly Hydro is to be contulated on the excellent job of site preparation that was carried

One can easily see that accurate estimates of the high water of were made...the flood behind the dam had produced an ellent recreational area, with clean unobstructed shorelines water."

gion gets new PR man



N. K. (Norm) Manning this month took over as public relations officer for Ontario Hydro's Eastern Region with headquarters at Belleville. He replaces W. J. Killough, regional public relations officer for nine years and now assuming the position of supervising public relations officer in Toronto.

After graduating from the University of Toronto with a B.Sc. in Forestry, Mr. Manning worked briefly with the Abitibi

ver and Paper Co. at Smooth Rock Falls. He joined Hydro's earch division in 1951, later transferring to Niagara Region's stry department. Subsequently, he moved to the post of chief stry instructor. He transferred to public relations work in 1960, the time of his latest appointment, Mr. Manning was senior ic relations officer in Toronto.

orkshop session

than 250 delegates met at Etobicoke's Skyline Hotel last the for the AMEU-sponsored Metermen's Workshop—an lal November event since 1962.

tendance was drawn from across the municipal utility, afacturer, Ontario Hydro and government spectrum. The shop is designed to bring together those interested in ring to talk over common problems and see what's new in seld.

te innovation this year was the introduction of duplicate sessic; one designed for junior metermen, the other for managers cuperintendents. Bob Green, of St. Catharines PUC, talked t single-phase metering theory while B. W. Krutina, of a sand Gyr, Inc., Montreal, discussed the meaning of block and displayed related equipment. Automatic data ssing, as related to metering, was also discussed.

Sint presentation on instrument transformers was given by Milne, of Sangamo, and E. L. Mills, of Ferranti Packard Cic, while E. B. Forster, of Canadian General Electric, and Campbell, of Canadian Westinghouse, teamed together in a sitation on the theory and application of statistical sampling. I lough it didn't pertain particularly to metering, one talk much interest. It was entitled "Human Factors Engineering" was given by Bill Dukelow, assistant manager, Electrical Lips Safety Association.

Ped up late in the 19th century, but didn't really come into its until World War II. In the broad sense, it means how mesh with machines. Mr. Dukelow, using slides, showed to interrelationship could be used to improve safety.

esaid that accidents result where machine controls don't



They don't make 'em like that any more



follow the usual rules. Switches that turned the "wrong" way and levers that had to be pushed when psychologically they should have been pulled, were hazards. "I am sure that if everyone gives it some thought, they will remember some control or function, either on or off the job, that they had some difficulty with. I am sure, if you examine the problem closely, you will find an error in design."

In other sessions, such items of interest to metermen as burden and accuracy classifications, testing procedures, sample testing tools and a government look at meter installations were presented. A traditional "What's your beef?" program of questions and answers was held in the evening. Among the panelists was W. J. S. Fraser, chief of the federal government Standards Branch in Ottawa. AMEU president Lloyd Askwith, of Ottawa, opened the workshop. OMEA president J. R. Philips also attended.

Checking over the Punkydoodles Corners service truck are A. H. Eadie, Markham; Moe Shepherd, EUSA and J. Murphy, North York. Clarence Labelle, Smiths Falls; John Woods, Goderich; Orval Blower, Port Credit and Harold Watters, Whitby, are looking at a multi-dialed piece of hardware.

speaking of pr

The public relations activities of the municipal utilities are outlined regularly in this feature by the recording secretary of the joint OMEA-AMEU committee.

In a collective sense, the municipal utilities in Ontario form a unique public enterprise. Yet, like the navy of another era, they have also been called a "silent service".

However, an increasing number of utilities are now finding ways of communicating in practical terms with their customers. The most popular method is with a pamphlet entitled "Accent on Service" and a simplified annual report. Formats for these direct mail pamphlets were prepared by the OMEA-AMEU PR committee and are available to all utilities.

Just as the tailor measures his client before cutting the cloth, some utilities have found it prudent to measure the interests and attitudes of their customers before undertaking a broad communications program. Although this research can take many forms, one that has been suggested by the Co-ordinating Committee and used by several local utilities this year was a direct mail questionnaire.

One of the first utilities in Ontario to act on this suggestion and produce its own questionnaire was Mildmay, a commission in Bruce County serving some 350 customers. It reports a high number of returns – about 90 per cent. Although most customers were satisfied, some commented on the street lighting, giving the utility an opportunity to decide whether some explanation was necessary or whether extra lights should be installed.

For comparison's sake, utility experience with direct mail questionnaires across the province indicates the highest percentage of response in the smaller communities. As the size of the community grows, returns fall off to about five per cent in larger cities. This is in keeping with national averages. Survey results are no less credible or useful in larger centres, but the proportion of unsatisfied customers may appear to increase as a result of the reduced returns.

Waterloo PUC received a response that exceeded even its own optimistic hopes when it invited customers on a tour of the hydro and water facilities. The utility provided bus transportation to various plants and stations in the system and even offered rides in an aerial bucket.

More than 500 persons made the "Survey of Progress" and received a souvenir brochure as well as refreshments after the tour. Waterloo was so pleased with the results that it may become an annual event.

Utility bills and mail strikes go together like the irresistible force and the immovable object. Something had to win, and in most cases this past summer it was the bills. Reports from across the province indicate that local utilities arranged for their bills to get to customers one way or another.

Of particular interest were those utilities who explained their temporary billing policy to customers through an advertisement in the local newspaper. So far, ads placed by St. Thomas, Petrolia, Pembroke, North Bay, London, Dunnville, and Barrie have come to our attention. It's a chance to break it to the customer gently and thank him for his co-operation at the same time.

Grade 10 geography students from the local collegiate institute were welcomed to a Galt PUC meeting recently. The meeting was punctuated with sideline explanations into the workings of the PUC as the students gained first-hand knowledge of commission activities – present and proposed.

New faces

Appointments have been made to the job of consumer service and sales engineer in both Ontario Hydro's Niagara and Northeastern regions. Philip J. Garlough moves to Niagara while Martin R. Pask assumes the Northeastern post, effective the first of February.

Mr. Garlough, an electrical engineering graduate of Queen's







Martin R. Pask

University, is a 22-year Hydro veteran with extensive conservice experience. Included are stints at Niagara Falls, Ot Belleville and in Head Office at Toronto. Since 1965 he has consumer service and sales engineer at North Bay. He suc Ian S. Stubbs, who after 39 years with the commission retire January 31.

A veteran of 18 years with Hydro, Mr. Pask is an electengineering graduate of Purdue University, Indiana. He worked in the consumer service area of the commission in Eastern Region and Head Office. For the past three years heen market planning engineer in the Sales Division.

Waste not

Pulverized fuel ash, a product of power stations in Engla playing a leading role in the two million pound restoration sc to save the centuries-old cathedral, York Minster.

Better known on this side of the Atlantic as fly ash, the mis being combined with cement into a grout to strengthe stonework of the ancient landmark.

Holes of various depths are bored in the masonry and pumped in. Outlets revealed by the water are stopped up. the grout is fed in under pressure to fill the tiny holes and a that have developed in the original material because of a ment.

Sales of fly ash by the Central Electricity Generating Board more than 3.5 million tons a year. Most of it is sold as construction but it is also widely used in concrete and in the manufactor bricks, building blocks and aggregates.

A Canadian firm is at present building a \$1.5 million pilot to process fly ash from Ontario Hydro's Lakeview power st near Toronto. The waste will be manufactured into aggit to replace sand and gravel in structural concrete and will a refined to replace up to 30 per cent of the cement used in maconcrete.

October energy production

Primary energy provided by Ontario Hydro in Octobe totalled 4.75 billion kilowatt-hours, an increase of 9.1 per cent over the same month a year ago. For the firs 10 months of 1968, the total is 45.37 billion kilowatt hours, up 8.4 per cent over the same period last year.

Adjusted for seasonal influences, primary energy demand in October was 4.76 billion kilowatt-hours 4.1 per cent more than the previous month. The season ally adjusted total for October represents 57.05 billion kilowatt-hours at annual rates. This is 410.35 per cent of the energy demand in 1949.



e of the more alarming signs of the times is ng largely overlooked by the guardians of the lic weal, it seems to us, and that's the wing propensity among doctors to regard roise as a good thing.

me was when the medical practitioner ded to view the benefits of physical exertion a jaundiced eye. Even respectable doctors known, on occasion, to make the comng suggestion that exercise might just posydo more harm than good.

ut those days are gone and we sedentary s can look forward to nothing but misery such time as the white frocked fraternity rses gears and decides that the really healthy w is the one whose pudgy frame is notable for the absence of muscle.

eanwhile, things are going from bad to se. First it was isometrics. This was tolerable much as it didn't involve any huffing or ng and the necessary playing-off of one cle against another could be performed conantly with other acts such as pouring a glass per or lighting a cigarette.

is worked, but it didn't last simply because wasn't enough discomfort involved. Next 3 5BX and the high respect we formerly held he Air Force vanished into the wild blue ler. This program called for a great range of -twisting, back-bone-bending heroics well lated to incapacitate the most agile speciand the worst is upon us now.

lled aerobics, and having to do with cardioonary fitness, this latest regimen is accredited e medics of the U.S. space administration was obviously stolen directly from the uis de Sade, that mischievous French gentlewhose shenanigans added the word sm" to our vocabulary.

A obics strips all the frills from keeping fit and sns to the scrap heap all those delightful maptions for pleasantly thumping, vibrating, eding and caressing ourselves into shape. It is at golf, tennis, bowling, pinochle and any socially acceptable pastime which might parded as combining exercise with enjoy-

A obics and pleasure just don't mix. It's a illophy which has senile men of all ages gig themselves into exhaustion along the

highways and byways of the nation. It's even stripped away the one redeeming feature of a heart attack – plenty of bed rest – and has victims running, jogging, walking and crawling their way back to good health via the media of misery.

And it's characteristic how our doctors have managed to reach a fair degree of unanimity as to the benefits of physical exercise after a heart attack but tend to view the practice of sex at this time with considerable alarm.

As one eminent physician puts it: "Sex is like any other activity of life, carry on as usual but if you can't enjoy it, give it up and take up something you can enjoy." Like jogging or running, we presume.

In a society of softies where millions of dollars are willingly spent to avoid the physical effort required to crank up automobile windows, we give aerobics about six months. Admirable as the effects of all this masochistic activity may be, it won't last because it cannot be performed in a reclining position and it calls for some degree of muscular involvement.

And there is some evidence that the more enlightened of the physical crowd are becoming aware of the situation and are casting about for alternatives. As with so many of our problems, electricity may provide the solution.

Over in England, Lord bless'em, they're working on a development which may just lead to the perfect kind of exercise – the kind that can be carried out in one's sleep. With this new apparatus, according to the report we received, "you just lie there while tiny electric currents massage eight parts of your body."

Splendid! Provided some choice is provided in the matter of parts one wishes to develop.

■ Among the more obscure benefits of electricity are the countless number of pool players it has saved from an untimely end over the years. In support of this rather unusual claim, we quote from England's Electrical Review of May, 1888, in which a correspondent had this to say:

"Having had thirty years' experience with billiard life, I venture to give my opinion as regards to lighting billiard rooms by electricity in preference to gas. It was thought some years ago an impossible feat to light a room satisfactorily in this way, and I shared this opinion; but this system has lately been adopted in a new room and is in every way advantageous on the score of cleanliness and cost and, what is still more important, health

"Had this been known and acted on sooner it might have prevented the loss of many lives of those players who have succumbed in consequence of the foul atmosphere arising from burnt gas, more particularly in the winter months."

■ And over in Niagara Falls, honeymooners are still setting records. "In fact," said one spokesman for the local Chamber of Commerce, "we set an all-time record in September of 1,693 couples compared with 1,601 in June."

This is the highest monthly total in the 12 years the Chamber has been keeping tab on such things and the report is careful to point out that the mighty cataract remains the major attraction. It notes that the number of prime viewing hours per day is reduced from 14 to 12 in mid-September due to river control regulations.

Obviously the reduction in viewing hours

hasn't dampened the enthusiasm of honeymooners, who seem to be finding ways of amusing themselves quite aside from watching the waterfalls.

- Two news story headings have come to our attention. The first apparently refers to a pretty dull meeting on safety held in Northern Ontario. It says "Electrical Meeting At Little Current." The other tops a story on diverting water from the St. Lawrence into the Raisin River near Cornwall and it's as fruity as a nutcake: "Rhubarb Over Raisin Current."
- Also current is a report from the Village of Burford in the Niagara region where the local Hydro office was bombarded with complaints about the clown working on power lines. As it turned out, he was a well qualified and very, very dedicated lineman responding to an emergency call.

Seems he'd been at a Hallowe'en costume party and hadn't chance to change from his clown's suit before administering to the electrical problem. Minutes later he was back bobbing for apples and it's probably just as well he didn't come as a little green man from outer space. He'd have scared the sheets off a lot of little ghosts.

■ Another strange tale comes to us from a correspondent recently returned from a pleasant holiday in the Blue Grass country of Kentucky, Among the highlights was a visit to one of the famous horse farms in the area during which he was shown the breeding barns. The head groom pointed out what looked to be a new but run-of-the-mill fluorescent lighting fixture in the bridal chamber and suggested that it represented the latest technique in stallion stimulation.

Contrary to general belief, he pointed out, stallions are not all that virile and some, upon being led into the boudoir, will just stand there shuffling their feet, munching their oats and ignoring madame entirely. Snap on the new lights, though, and things begin to swing.

Unable to explain the phenomenon, the groom left the matter open to conjecture. Lighting specialists here at Hydro profess ignorance of any new developments in the field of aphrodisiacal illumination and suggest that it may simply be a matter of more candlepower.

- And we're still feeling the effects of that irresponsible AP dispatch from Palm Desert last October. That's the one about the stag film which was supposed to have flashed on the local TV station after the regular programming was done. Even if it was true, why tell us about it? Staring at empty picture tubes night after night can be pretty frustrating.
- Finally, we would leave our kind readers for another year with some food for thought a morsel of corn. It concerns a new drug our scientists are developing which combines the ingredients of the birth control pill with LSD. It's for tired parents who'd like to take a trip without the children.

Merry Christmas to all, and to all a good night.

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